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THE LIFE WORK OF
NATHAN STRAUS

LINA GUTHERZ STRAUS

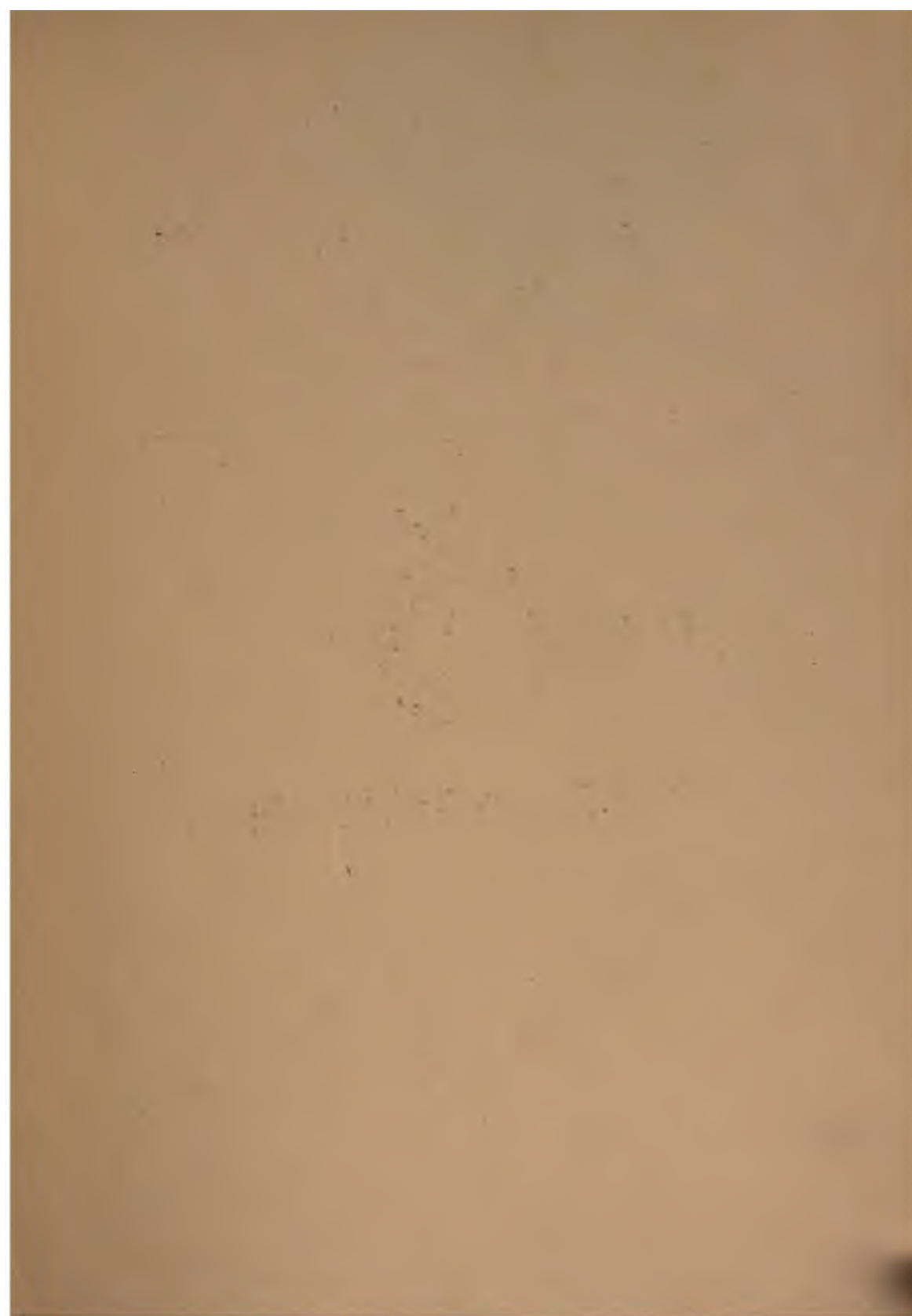
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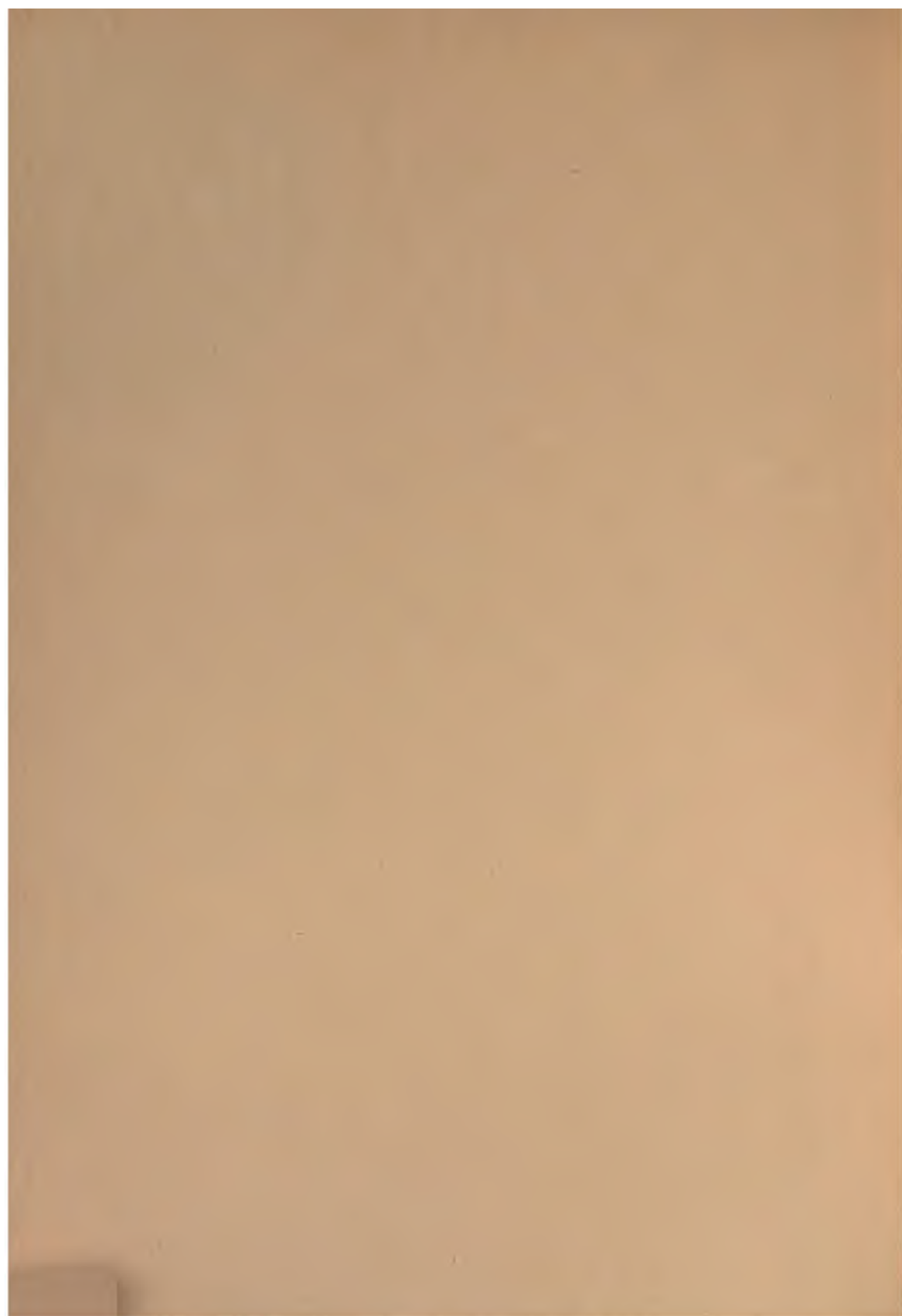
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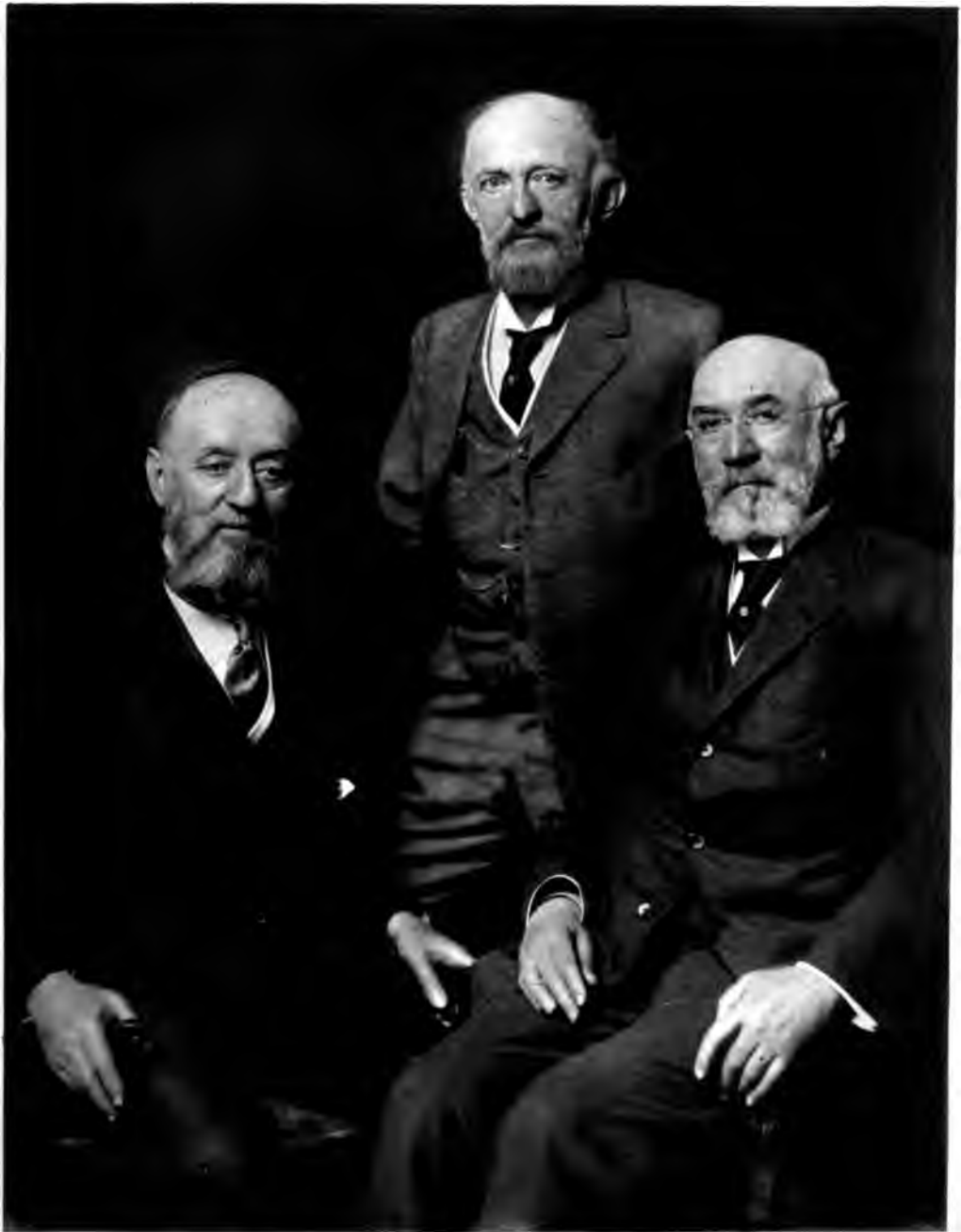


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Nathan Straus Oscar S. Straus Isidor Straus
Taken shortly before the death of the last named in
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DISEASE IN MILK

THE REMEDY PASTEURIZATION

THE LIFE WORK OF NATHAN STRAUS

By Lina Guthertz Straus

LANE LIBRARY

SECOND EDITION

Revised and Enlarged

TO COMMEMORATE THE 25TH ANNIVERSARY OF
THE INCEPTION OF THE WORK.

NEW YORK
E. P. DUTTON & COMPANY
PUBLISHERS
MCMXVII

Ka

COMPILED
FOR MY HUSBAND
AT WHOSE SIDE IT HAS BEEN
MY PRIVILEGE TO LABOR
FOR MANY YEARS FOR
THE SAVING OF
LIVES

VIA Lina Gutherz Straus

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BY LINA GUTHERZ STRAUS

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THE FIRST INFANT MILK DEPOT IN AMERICA.
Nathan Straus Pasteurized Milk Station, East Third Street Pier,
New York City, 1893.

FOREWORD.

(To First Edition)

The presentation to the public of this book has a definite purpose, and is animated by a single hope. In calling the attention of others to the life work of my husband I trust that beneficent spirits may be stimulated to go and do likewise and achieve greater things for humanity. My husband's philanthropic service for the last three decades can in all literalness be said to have been dedicated to the one thought of saving human life. From the time when Mr. Straus made his first gift in the fight against tuberculosis, by presenting a small cottage to the Trudeau Sanitarium in the Adirondacks, over thirty years ago, until his more recent conception of the idea of a PREVENTORIUM against tuberculosis—all through his consistent and energetic warfare against impure milk and his championship of the PASTEURIZATION OF MILK, the ideal which was the guiding star of his career was PREVENTION. This ideal led him to undertake the extension of his propaganda all over the world. And this ideal called forth from Professor Abraham Jacobi in a letter of June 5, 1895, the following encouraging words: "I trust you will be able to extend the blessings conferred by you still further, not only over the city but outside also. I believe a call over your name will suffice to arouse the humanitarian interest of practical philanthropists in other large communities with the same salutary results obtained by you in New York." May this compilation of the record of my husband's work prove such a "call" in the most comprehensive sense. And the more all co-operate in this divine work of saving life the sooner will be realized the law of universal human brotherhood.

August 28th, 1907.

My dear Mr. Straus:

It gives me much pleasure to testify to the great good you have done by distributing pure milk among the poor of New York. Service is the only measure of greatness, and you, like other public benefactors, will be known to future generations, not by your income, but by the outgo — the overflow — of your life, which has so largely contributed to the welfare of others.

May your years be long upon earth and may they be brightened by the knowledge that you have by your generosity brought health and happiness to thousands of homes.

Yours truly,

A handwritten signature in cursive script, reading "W. F. Bryan". The signature is written in dark ink and is positioned above a short horizontal line.

August 25, 1907.

Hon. Nathan Straus,

My dear Friend:

If all the little children whose lives you saved could mass themselves around the building now to be erected, you would have the most splendid memorial ever made to man.

It makes me glad to give testimony to your wisdom and your heart.

Your friend,

A handwritten signature in cursive script, reading "George Dawsey". The signature is written in dark ink and is positioned below the text "Your friend,".

INTRODUCTION.

A LETTER TO MRS. LINA GUTHERZ STRAUS, IN PLACE OF A PREFACE.

BY ABRAHAM JACOBI, M.D., LL.D.

PROFESSOR-EMERITUS OF DISEASES OF CHILDREN, COLLEGE OF PHYSICIANS
AND SURGEONS, COLUMBIA UNIVERSITY

Dear Madam:

YOUR suggestion that I may introduce this book of yours conveys a great honor. I accept it gratefully. Mr. Nathan Straus has often mentioned my name while spending the last twenty-five years in rendering his missionary work more effective. He has succeeded in his results by doing things, delivering sermons, traveling all over the world, spreading his gospel, and minding the business of the infants and children, which he considered his.

My connection with this work of his has been only slight. Often he has asked my opinion and advice. This I was anxious to express, for what I could do in individual cases within the limits of professional work, he undertook to perform on a large scale.

My acquaintance with the milk question and the attempts at solving the problem connected with it extend over all my professional life. My experience dates back to the summer of 1854, which was excessively hot and fatal. It was my first year in New York practice. I soon learned then, as in many later years, that babies, like so many adults, may be either suddenly or slowly destroyed by excessive heat alone. But it is not mere heat that furnishes the vast majority of infant deaths. I well remember when, during a scorching afternoon, I left a tenement house in Chrystie Street, where I had seen a baby dying of "summer cholera." In my despair I applied to two colleagues for consolation and advice. The first said, "Give no milk"; the second added, "Starve them for half a day or a day." "No milk" saved many of my babies.

What did we call milk? What sort of milk was it that we were compelled to feed our babies?

The milk Nathan Straus had to deal with twenty-five years ago, when he started his work, was greatly superior to the milk we suffered from forty years before him. Part of New York was supplied by cows fed on brewer's swill in Long Island stables, which no cow had an opportunity to leave at any time after having been imprisoned there. There she was kept in foul air, standing or resting in her own manure, with no other food, sickening until her tail rotted off and her skin broke out in gangrenous ulcers, and she died. That was considered by her owner

a cheaper method than that which the most abject and money-hunting man of today would dare to follow.

After a while the subject of swill milk was treated of in medical societies, where Dr. Rottson Percy — whose name should be remembered and revered for his endeavors in behalf of cows and infants — was the most energetic preacher of sound chemistry, common sense and philanthropy.

Such was a goodly part of the milk that reached our households. It was more or less white or bluish, more or less impure — or rather, dirty — half a day or a day old, acidulated or sour. When it was used for the baby it was rarely strained, not clarified, rarely boiled, often mixed with water which was more or less impure.

The vast majority of households were those of working people in small dwellings, or even in tenement houses of four or five stories. Their number has increased marvelously. By taking in the entire lot, separate rear houses were erected, thus shutting out all air and sunshine.

What was done with the milk when it reached the household? Of present improvements none existed. Food stuffs would deteriorate rapidly and intensely. Ice could be obtained only by the better situated families. The tenement house people and the poor had none. By them milk had to be kept in the coolest part of the dwelling, if there was such a place. In a bottle or a jar I had it placed, wrapped up in cotton or woolen stuff, or in an open jar or a kettle half filled with water, and thus was secured some evaporation from the surface and a very moderate degree of cooling off. I always advised boiling the milk for infants as soon as it arrived, and again once or twice in the course of a day. We knew nothing then of bacteria, but I felt sure that a minute's real boiling would accomplish all I could hope for. At all events, my order was, "NO RAW MILK."

That is what facilitated the obedience to the official advice or order to pasteurize or sterilize when it was given twenty-five or thirty, or forty years afterward; but when, after all these many years had elapsed, the results left much to be desired in general practice. Mortality was high in private families, *but far more so in institutions*. Improper food and hospitalism are allied enemies of infancy. When they are combined with ignorance and superciliousness of managers of institutions, death is unconquerable. When, for instance, nearly fifty years ago, I proved the mortality of babies in a large fashionable infant institution to be actually one hundred per cent., and proposed means to reduce it — such as changes of diet, daily bathing, killing flies, removal of heavy bed curtains, admission of night air, and farming out — *I was expelled*.

Gradually voices were raised in favor of the various admixtures I recommended to make cow's milk more similar to human milk. And

the greatest success I obtained by the addition of a cereal decoction as a diluent of cows' milk. Barley water or oatmeal water for constipated babies has taken the place of plain water for a good many reasons. And it has been proved that small amounts of farinaceous foods are digested by even the newly-born. Not alone are they digested, but absolutely necessary when artificial alimentation is resorted to.

One of the formulae prepared in the Straus bottles is regulated by these facts. And as events have proven *just the addition of the cereal in the prescription has been the most efficacious in the saving of babies' lives.*

It is more than two dozen years since Nathan Straus began and carried out his life-saving practice. His methods are simple and direct; his results satisfactory to the infants. These are, after all, the best critics of what is being done for them. They were not impressed by the hundreds of formulae concocted for them by manufacturers, chemists, and "specialists." They were indifferent to the books and papers written by many, in many interests; to the disquisitions on fats, proteins, metabolisms, by writers very young and very old, by editors, authors, and publishers. They swallowed the Nathan Straus doses with grateful round eyes and gratified smiles, and persisted in living and thriving. Long may they continue to live — Nathan Straus and his many babies in many lands!

The Nathan Straus cereal admixtures to his feedings are correct. Altogether, potatoes, fresh green vegetables, and fruit, lime juice, fresh milk, meat, and yolk of eggs — also yeast contain these vitamins. Superheating in the process of canning, and by steaming, if the steam water is thrown away, destroys the vitamins. Sterilizing of milk, which means overheating, for any length of time, destroys vitamins. In Nathan Straus' practice from the very beginning, when no "vitamins" were appreciated, there seems to be something prophetic. What he ordered from the beginning was PASTEURIZATION — that is, a temperature which does the work of immunization without depriving fresh milk of its vitamins and of its values as a food.

Before his time, my own custom had been to advise, wherever poverty, ignorance or shiftlessness was feared, to heat milk "until the first bubbles" appear; then take it off, and after a quarter of an hour to cool it completely. In that way I felt sure that the pasteurization temperature was passed twice without the heat of the milk having been too intense. Whenever a family owns and uses a real pasteurization apparatus, or whenever the market milk, as at present in New York City, is watched by the Health Department for the purpose of supplying honest pasteurized milk in place of our former "commercial" pasteurized milk, my plan is rendered superfluous. It is always serviceable, however, whenever conditions are doubtful.

What is a "doubtful condition"? As a rule, unless *closely watched* and occasionally punished, a "doubtful condition" may be the dairy, the dairy owner, his water and towels, his man and driver, the official inspector, the milk trader, and what not. I feel safer by pasteurizing every milk, even though "certified." "Certification" is no spell to me.

I cannot know how much time and effort Mr. Nathan Straus may have spent in studying whatever the last twenty-five years have produced in the shape of literature. Not much, I feel sure. I take it, he was as fortunate in his disregarding, as in his adopting it all; and most of modern printing, both professional and lay, did not get sufficiently close to him to annoy or harm him. Twenty years ago his teaching was ridiculed and contested as coming from a "layman." That layman knew enough, however, to insist upon practicing what he found to be beneficial.

Good milk—not too fat; clean milk, NO RAW MILK, proper dilution, *no proprietary foods*—they have been his precepts. Gradually they were obeyed and found salutary. The hosts of his friends in all lands multiplied when people were obliged to acknowledge that "layman's" successes in reducing the mortality of infants.

And to you, Mrs. Straus, we owe our sincere thanks for securing a second edition of your book, in which you have proved and demonstrated again what the great German master expresses in two immortal lines:

*"Dass sich ein grosses Werk vollende,
"Genügt ein Geist für tausend Hände."*

*Very respectfully
a Jacob*

In April, 1914, the official Bulletin of the New York State Department of Health said:

"Pasteurization is a safe and efficient final safeguard for the purity of our milk supplies. Jordan estimates that the general pasteurization of the milk supplies in Chicago and Boston was followed by a reduction in the typhoid death rate amounting to a saving of 100 and 30 lives a year, respectively.

"In case of milk to be used for infant feeding the danger is, of course, greater and the need for protection still more urgent.

"No milk except that of certified grade should be used without pasteurization. **EVEN CERTIFIED MILK IS FAR SAFER PASTEURIZED THAN RAW.** The wise mother buys the best milk for her children and then pasteurizes it to make it absolutely safe."

TUBERCULOSIS IN CATTLE AS A SOURCE OF INFECTION TO INFANTS AND CHILDREN.

BY MAZYCK P. RAVENEL, M. D.

**PROFESSOR OF PREVENTIVE MEDICINE AND MEDICAL BACTERIOLOGY,
UNIVERSITY OF MISSOURI**

MILK is the most valuable single food which nature has given us. It is of special importance to the infants and children of our population who are at an age when they will be made physically fit or unfit for life. To furnish safe milk to this population is, therefore, one of our highest duties, and one which concerns every member of the community from the highest to the lowest. It is impossible to lay too much stress on the value of pure milk. Many disease germs thrive in milk and are carried to the consumers through the digestive tract. One of the most important of these diseases is tuberculosis.

In 1901, Professor Robert Koch, the discoverer of the tubercle bacillus, gave it as his opinion that the amount of tuberculosis in human beings due to the bovine germ was so small as to make it unnecessary to take precautions against it. His announcement was refuted by experiments which had been carried out at the laboratory of the State Live Stock Sanitary Board of Pennsylvania. The proof given was the isolation of the tubercle germ from the bodies of children who had died of tuberculosis, and inoculation of these germs into cattle. The result was generalized tuberculosis and death, showing that they were bovine in origin, and consequently that the children from whom they were isolated had received their infection from cattle.

Following this work much evidence has been given by scientific men and by governmental commissions in various parts of the world. Both the English and German governments appointed such commissions, and both of them have given indisputable evidence that the bovine germ can and does produce extensive and fatal tuberculosis in human beings. The German Imperial Commission found that of 84 children who had died of tuberculosis, 21, or one-fourth, had contracted the disease from bovine sources.

In addition to these reports, which may be found in official publications, especially notable work has been done in the Research Laboratories of the Board of Health of the City of New York by Park and Krumweide, who demonstrated that in the City of New York at least 300 children died every year of tuberculosis contracted from bovine sources, and that in addition to the fatal cases a large number of children

were permanently disabled or deformed through tuberculosis of the glands, bones and joints by infection from this same source.

In Edinburgh it has been shown by Fraser that the bovine germ is a frequent cause of tuberculosis of the bones and joints, the source of infection in 67 unselected cases in children under 12 years of age proving to be bovine in 41, human in 23, and in 3 both. In children under five years of age of 47 cases examined, 32 showed infection from bovine sources, 12 from human, and 3 from both. In the same city Mitchel has examined 72 children under twelve years of age coming into the clinic with enlarged cervical glands. Of these 65 showed infection with the bovine bacillus and only 7 with the human germ. Of these 72 cases, 38 were in children under five years of age, and of these 35 showed infection from the bovine germ, and only 3 infection from human sources. It is evident from these results, as well as from those obtained by other workers, that the chief danger of infection with the bovine germ is in children, and especially in children under five years of age. It is self evident that practically the only source of infection in such children is the milk they drink.

The one link which is needed to complete this chain of evidence is detection of tuberculosis in cattle and of the tubercle bacillus in milk. Tuberculosis in cattle is so common that it is an economic scourge, and *the bovine germ has been found in milk so frequently and by so many observers* that it is now an acknowledged fact that no milk supply is safe unless the most rigid precautions are taken.

The protection of children from tuberculous infection by the bovine germ contained in milk is an imperative duty. Under existing conditions it is possible to exclude the bovine tubercle bacillus from only a small portion of the milk supply with any degree of certainty, and we have come to rely more and more on pasteurization, which gives absolute protection.

The far-sighted and splendid philanthropy of Nathan Straus, begun at a time when there was much opposition to pasteurization, has done much to educate physicians and public alike, and has been the means of saving the lives of many infants and children.

Wojciech P. Raveel

"The conclusion is almost forced upon us that the tuberculous dairy cow is, to say the very least, one of the most important sources of tubercle bacilli with which we have had to deal.

"From figures and estimates that are available it seems fair to conclude that not less than 20 per cent. of our dairy cows are tuberculous, and that tuberculosis occurs to some extent in about 30 per cent. of our dairy herds. Four investigations taken together show that among 439 samples of milk, 8.2 per cent. were infected with live, virulent tubercle bacilli."

—U. S. Bureau of Animal Industry.

PASTEURIZATION.

BY E. C. SCHROEDER, M. D. V.

DIRECTOR U. S. AGRICULTURAL EXPERIMENT STATION, BETHESDA, MD.

AFTER years of study as a practical investigator and a student of the available literature on the subject of milk as a vehicle for the dangerous dissemination of disease germs, *I am positively convinced* that the following conclusions are true:

a. Among single causes to which preventable diseases and deaths can be charged the most important is the use of raw milk as a food.

b. Those who know the dangers incident to the use of raw milk will not permit a drop to pass their lips or the lips of those for whose health they are responsible.

c. Those who know the truth about pasteurization know that reasonably clean and fresh milk from dairy animals which show no symptoms of disease, after it has been properly pasteurized, is a superlatively valuable article of food.

These conclusions are based not only on the frequency with which epidemics of typhoid fever, diphtheria, scarlet fever, infectious sore throat, etc., have been traced to the use of raw milk of seemingly good and even superior quality; not only on the frequency with which tuberculosis and infantile abdominal troubles, with their high mortality, must be charged to the use of raw milk; not only on the frequency with which tests have proved milk of otherwise good quality to be contaminated with tubercle bacilli, the germs of infectious abortion of cattle, colon germs, streptococci and other germs about the relation of which to health we are at best poorly informed, and not only on the fact that disease and other germs in milk can be killed by pasteurization. The conclusions are based also, and this is their main and most reasonable basis, on two facts, as follows: 1, That human knowledge and ability have remained inadequate to devise economical means which will sufficiently protect milk against contamination with disease germs to make its use in the raw state safe; and, 2, That nothing as efficient or economical as pasteurization to make milk safe has been discovered.

Milk is a substance in which some disease germs, once they get into it, multiply very rapidly without causing changes our senses can detect, and pasteurization destroys the virulence of disease germs in milk without determinably changing its nutritive value or digestibility.

The argument that pasteurization is a cheap substitute for proper dairy methods is no longer tenable, as the greatest danger to which

health is exposed through the use of raw milk is not the relatively harmless bacteria good dairy methods partly eliminate, but in plain language, the disease germs which often get into milk no matter what dairy methods are used. Such disease germs frequently have their origin in the seemingly healthy bodies of infected dairy employees and dairy animals. Every physician knows that the dissemination of disease germs from the bodies of infected persons and animals usually begins before real symptoms of disease become manifest and often continues long after all symptoms have disappeared.

P. C. Schroeder

MR. STRAUS' PIONEER WORK.

BY ROWLAND GODFREY FREEMAN, M. D.

MR. NATHAN STRAUS deserves great credit for having established in New York in the Spring of 1893, early in the period of pasteurization of milk, a primitive but well equipped laboratory for furnishing properly modified and pasteurized milk for infant feeding in the bottles from which it was to be fed. I say it was primitive, but it was much more elaborate and perfect in its details than anything that had before been attempted.

The need for this establishment was well demonstrated by the demand for the milk produced and it was not long before other branches of the first pasteurizing plant were needed, while later the original plant on a Dock at the foot of East Third Street became insufficient and a much larger plant took its place.

Mr. Straus' original Milk Depots have been amplified both by new depots created by him and by other agencies so that there are now in the City seventy-eight milk depots, most of them under the supervision of the New York Department of Health.

It was Mr. Straus, however, who first established a milk depot with proper equipment, and who demonstrated for New York City the value of this method of controlling the feeding of artificially fed babies.

Since the establishment of this depot there have been various changes of opinion on the part of prominent specialists in the diseases of children as to the comparative value of raw and pasteurized milk, but through it all Mr. Straus has wisely persisted in the use of pasteurized milk which, while containing all the virtues of raw milk, provides a valuable security against the disease-carrying bacteria feared in milk.

Rowland Godfrey Freeman

PASTEURIZATION PRACTICALLY NECESSARY.

BY RUPERT BLUE, M. D.

SURGEON GENERAL, U. S. PUBLIC HEALTH SERVICE.

I AM of the opinion that pasteurization is now quite generally recognized as a process necessary for the treatment of milk which is not otherwise protected against infection. Theoretically, pasteurization should not be necessary; practically, it has become necessary owing to the unfavorable conditions surrounding the production of milk.

There seems to be no doubt that the disadvantages arising from the heating of milk are more than compensated for by the resultant effectual prevention of much disease and even death which might otherwise occur, especially in infants during the Summer months.



THE CHIEF DEFENSE AGAINST MILK-BORNE INFECTIONS.

BY S. S. GOLDWATER, M. D.

FORMER COMMISSIONER OF HEALTH OF THE CITY OF NEW YORK.

THE present attitude of the Department of Health of the City of New York toward pasteurization of milk is of gradual development. When pasteurization was first introduced by dealers as a commercial process, the efforts of the Department were based mainly on a desire to prevent the sale, as fresh milk, of milk which had been kept in storage for some days and in which the large bacterial content had been rendered partly innocuous by pasteurization.

The gradual perfection of the Department's administrative control over the sources of milk production in 1906-1909, however, led to the discovery of a number of milk-borne outbreaks of typhoid fever; one of these, in 1909, embraced over three hundred cases and was traced to a typhoid bacillus carrier living in the central part of New York State. Another outbreak shortly afterwards, embracing some fifty cases, was traced to a bacillus carrier working on a small dairy in Vermont.

At this time our knowledge of typhoid bacillus carriers, though really beginning only about 1906, was already considerable and it was known that from two to five per cent. of persons who had recovered from typhoid fever continued to harbor the living typhoid bacilli in their excreta. It was an easy matter, therefore, to calculate, with 150 to 200

cases of typhoid fever per 100,000 of the population annually in this part of the country, that there must be over 100 typhoid bacillus carriers in the dairies supplying New York City.

Another factor must here be mentioned. It had long been known that bovine tuberculosis was exceedingly prevalent among the dairy cattle in this country. Figures compiled by Professor Veranus A. Moore, indicated that 75 per cent. of the herds in New York State were infected. Bacteriological investigations by Park, Hess and others indicated that about 15 per cent. of the ordinary milk sold in New York City contained living tubercle bacilli. There were, to be sure, many who believed that these bacilli were not dangerous for humans and based their belief on the findings of Theobald Smith, Koch, and others as to the difference between bovine and human tubercle bacilli. The very careful studies of the British Royal Commission, the Imperial German Commission, and particularly the very extensive investigation by Park and Krumwiede, showed that while bovine tuberculosis was not responsible for ordinary pulmonary consumption in adults, yet it was an important factor to be reckoned with, inasmuch as it was responsible for about 10 per cent. of tuberculosis deaths in children.

Finally came the startling outbreak of septic sore throat in Boston, traced to a raw milk supply of almost certified grade. At the present time, therefore, the Department believes that pasteurization constitutes the chief effective defense against milk-borne infections. There is little doubt in the minds of those who have studied the matter that the compulsory pasteurization of New York City's milk supply has been the chief factor in the recent remarkable reduction in the city's typhoid death rate. The figures showing the typhoid fever deaths per 100,000 of the population in the City of New York since 1908 are as follows:

1908.....	12.04	1913.....	6.7
1909.....	12.2	1914.....	6.2
1910.....	11.6	1915.....	6.0
1911.....	10.9	1916.....	3.8
1912.....	9.6		

The considerations just enumerated led the Department on February 1, 1914, to insist on the pasteurization of practically all milk sold in New York City excepting in the very highest (certified) grades.

The supervision and pasteurization of the city's milk supply as just outlined has undoubtedly been a most important factor in the reduction of the infant mortality of this city. From a rate of 160 or more ten years ago, the rate has fallen to 90 deaths under one year of age for every 1,000 births.



WILLIAM H. TAFT
New Haven, Conn.

October 5th, 1915.

My dear Mrs. Straus:

I have your letter of September 29th. Of course I am interested in the promotion of any system for protecting our babies from tuberculous milk, and I am glad you have published a book in which the precautions necessary to avoid disease in milk are set forth. Society is greatly indebted to you and Mr. Straus for your work in this whole matter.

Sincerely yours,



CHAS J. HASTINGS, M. D.
Medical Officer of Health

Toronto, January 5, 1916.

My dear Mr. Straus:

In the midst of my work I many times recall the very delightful hours I spent with you talking over the milk problem, and with Mrs. Straus and yourself at luncheon, with some of our mutual friends, in New York City some six or seven years ago.

When your turn comes to pass on to the next cycle of existence few will have left such a heritage behind them; few there are who have so immortalized their names in substituting man's humanity to man for man's inhumanity to man.

With kindest regards and warmest greetings for Mrs. Straus and yourself, believe me,

Sincerely yours,



MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CAMBRIDGE

DEPARTMENT OF BIOLOGY AND PUBLIC HEALTH

Jan. 2, 1917.

My dear Mr. Straus:-

I was ill when your telegram of congratulation and New Year goodwill was received yesterday, so that it brought me a double satisfaction.

You are very thoughtful every year to send a telegram of this kind, but really, Mr. Straus, it is you and not we Professors who have done most to secure pasteurization.

I shall never forget for how many years you fought practically alone and against the medical profession in favor of what is now accepted by everybody as the right thing to do, namely pasteurize milk.

I hope that the New Year may bring you many blessings, and I know that it cannot deprive you of one of the greatest of all, namely the satisfaction that you have done the right thing at the right time in respect to the milk problem.

With warm personal regard and best wishes for continued health and prosperity, I am,

Ever respectfully yours,

W. T. Sedgwick

Hon. Nathan Straus,
27 West 72nd St.,
New York,
N.Y.

PASTEURIZATION

The Milk Problem

AND

Mr. Straus' Solution



WHY THERE IS A MILK PROBLEM.

Why is there a milk problem? We hear of no meat problem. We hear of no fish problem.

The answer is —

Milk is the only animal food taken in its raw state.

Cooking destroys whatever germs may be in meat.

But when milk is used raw the germs are taken into the human system alive.

The milk problem is to prevent this without cooking the milk—to protect people, especially the babies, from the disease germs that may be in milk.

The concrete difficulties in the way of making milk safe and wholesome; how these difficulties have been met and solved by Mr. Straus; the benefits resulting to the babies from PASTEURIZATION OF MILK—these are the stories contained in this book.

Right here credit should be given to Professor Abraham Jacobi, dean of the American medical profession, that greatest of all specialists on infant feeding. To his guidance and to the cordial co-operation and assistance of Dr. Rowland G. Freeman much of the success of pasteurization is due.

It has been a long and often bitter fight against ignorance and prejudice. But the light has dawned and exact science and practical experience agree that by pasteurization, and only by pasteurization, can disease germs surely be destroyed and milk made safe to feed to young and old.

THE MILK PROBLEM.

COW'S milk has always been recognized as a desirable food for adults and an essential one for infants. It is a desirable food for adults because it contains in the highest degree of any food known a perfect balance of proteid, carbohydrates and fat. In addition, it is easily digestible. It is an essential food for infants because sooner or later — sooner with the poor, later with the rich — there comes a time when the mother cannot supply the right quality or quantity of milk for her baby. The ideal way of bringing up a baby until this time is always from the breast; but when this period is reached, whether it is after nine days or nine months, pasteurized cow's milk becomes necessary.

Milk, then, in its pure state, is a most desirable food; but conditions to-day make it almost impossible for the person of average means to obtain such milk. Congestion in population, which prevents cows being pastured near by, makes the cities dependent upon milk that is often two to three days old. The high cost and the difficulty of securing even at high wages dairy hands of scrupulous care and fidelity exclude the possibility of cleanliness in stable and dairy. The impossibility of efficient supervision of the health and cleanliness of the dairy hands and of the herd causes the constant peril of disease germs in the milk. All these conditions tend to make milk as it comes from the farm to-day an unsafe food. Under present conditions milk as it is brought to the market and to the consumer is full of bacteria more or less dangerous to life.

Every effort should be made to have milk produced in a sanitary way. But that even the best milk obtainable is not suitable for use in a raw state is believed by most physicians. Dr. North of the National Commission on Milk Standards said on January 12, 1912: "Certified (highest recognized grade of tuberculin-tested) milk does not insure immunity from other diseases of the

"It is not possible to overstate the far-reaching importance of the question of the reduction of infant mortality. Every man and every woman of every civilized country should feel a deep and personal interest in it. It affects not only the happiness of the home, but the welfare of the Nation and the future of the race."—President Taft to American Association for the Study and Prevention of Infant Mortality, November 9, 1910.

Of the 1,347,089 deaths in the United States in 1914, 278,500 were of babies under two years, and 65,298 of these deaths were from intestinal disorders, due to improper feeding, and about 20,000 were from infectious diseases, due often to disease germs conveyed to the babies in milk.

"Begin the attack upon infant mortality with the prevention of the Diarrhoeal Diseases of Infancy. * * * The prevention of these diseases—which are pre-eminently Filth Diseases—will wipe out one-fourth of the total number of deaths of babies under two years of age."—From pamphlet prepared by the Bureau of the Census, November 9, 1910.

Dr. Sims Woodhead, of the British Royal Commission on Tuberculosis, writes: "Every tuberculous cow is either an actual or potential centre of infection. We cannot get rid of the great White Plague until we take bacilli of bovine origin into consideration."

Dr. Schroeder, of the U. S. Agricultural Experiment Station, says: "Milk is frequently infected with living, virulent tubercle bacilli. There is nothing hypothetical, circumstantial or inferential about this. It is a fact, a plain, experimentally demonstrated fact."

The great German scientist, Prof. von Behring, to whom the world is indebted for the finding of Diphtheria and Tetanus Antitoxin, said: "The milk fed to infants is the chief cause of tuberculosis."

"When it is considered that a proportion of the milk herds are tuberculous, and that the disease is transmissible, especially in the case of children, a problem is presented that is as cogent as important. As elimination of the infected cow is not feasible from an economic standpoint, and as pasteurization is practicable and efficient, the question of pasteurization of the city's milk is one of the indications of to-day, and should be adopted by every community." — Dr. Francis E. Fronczak, Health Commissioner of Buffalo, June, 1914.

Dr. William H. Park, Director of the Research Laboratory of the New York Health Department, said (Jan. 27, 1912): "More cases of typhoid come from milk than from any other source, and the only actual safety for the consumer lies in pasteurization. Fifty per cent. of the children fed on cows' milk who die from tuberculosis got the disease from the milk."

"Diphtheria has apparently been spread by the best of our milk supplies; what protection have we against this in any raw milk?" — Dr. Rowland G. Freeman.

cow besides tuberculosis, or from diseases (including tuberculosis) which the dairy attendants themselves are likely to convey to milk, which is so sensitive to bacterial influence. Only pasteurization can absolutely guarantee this protection." Prof. W. H. Conn, of the department of biology of Wesleyan University, said: "All we bacteriologists agree that even the best obtainable milk supply is not absolutely safe for babies without pasteurization. For adults the danger is less. Get it as good as you can and use it freely. Pasteurize it if you want to. For my own use I certainly want it pasteurized."

Dr. John F. Anderson, director of the Hygienic Laboratory at Washington, examining 223 samples from the Washington milk supply, after the Agricultural Department had diligently weeded out tuberculous cattle, found 6.72 per cent. contained tubercle bacilli. At the annual meeting of the American Medical Association held in Denver, June, 1911, the Committee on Standard Measures of Procedure for the Control of Bovine Tuberculosis in Relation to the Milk Supply decided: "That milk must come from cattle tested once a year with the tuberculin test, or subjected to careful physical examination every three months, or it must be pasteurized."

Bulletin No. 41 of the Hygienic Laboratory in Washington, "Milk and Its Relation to Public Health," by various authors, quotes in a hundred pages epidemics of diseases which were entirely traceable to milk. Here you will find summarized the essential details of 317 outbreaks of typhoid, 125 of scarlet fever, and 51 of diphtheria, all owing their origin to infected milk, though it is admitted that not all the statistics available from foreign sources have been included.

There then presents itself the necessity of rendering this milk coming from the average farm safe for human consumption. The problem is how to destroy the noxious germs without destroying the milk.

Heating to various degrees has for years been the recognized means of procedure.

At first boiling, heating milk to 212 degrees, was the method of killing the germs, but this was found to impair the nutritive qualities of the milk and render it difficult to digest.

Pasteurization consists in heating milk to 145 degrees Fahrenheit and holding it at that temperature for half an hour. A higher temperature, 157 degrees, may be substituted and the milk held at this temperature for twenty minutes, producing the same result.

PASTEURIZATION DESTROYS ALL THE GERMS OF DISEASE THAT MAY BE IN THE MILK, BUT DOES NOT IMPAIR THE TASTE, DIGESTIBILITY OR NUTRITIVE QUALITIES OF THE MILK.

The process is named after one of the greatest scientists, Louis Pasteur, of Paris. It was he who suggested heating below the boiling point as a means for destroying bacterial organisms in fluids. However, his experiments had to do *not* at all with milk. The first extensive application of this process to milk was made by Mr. Straus.

Cow's milk, pasteurized is then a perfect food for adults; but cow's milk needs something further to make it an ideal food for infants. Their immature organs are capable only of digesting the ingredients in such proportions as they are found in mother's milk. Again science steps in, and by a process called "Modification" makes cow's milk all that the baby's system and condition require.

Milk, then, in order to be suited to a baby's needs, must meet with these three requirements: It must be as pure as possible, it must be pasteurized, and it must be properly modified. The Nathan Straus Pasteurized Milk Laboratory solves these problems as described in the following pages.

"The most important thing in the care of infants," said Professor Abraham Jacobi, "is just this, 'Use no raw milk.'"

"I hold in the near future it will be regarded as a piece of criminal neglect to feed young children upon milk that has not been sterilized (pasteurized). Milk is not always good in proportion to the price paid for it, nor free from the germs of contagion because it has come from cattle of aristocratic lineage. The latter quality, as recent experience has shown, carries with it special susceptibility to tuberculosis."—Nathan Straus in "The Forum," November, 1894.

The late Dr. Walter Wyman says: "Pasteurization prevents much sickness and saves many lives."

"Nathan Straus has shown for years that this simple and harmless process of pasteurization, wherever introduced, immediately results in the lowering of the death rate."—Emile Berliner, March, 1910.

"Virulent tubercle bacilli were found in 17 among 107 specimens, that is, in 16 per cent. of the milk retailed from cans in New York City."—Dr. Alfred F. Hess, in the Journal of the American Medical Association, March 27, 1909.

"Only one of the many important steps in the universal adoption of pasteurized methods," said Dr. North, "was the award made by the Board of Health last week to the Dairy Demonstration Company to furnish pasteurized milk for the fifty-seven milk depots taken over recently by the city."—January 26, 1912.



NATHAN STRAUS PASTEURIZED MILK LABORATORY
348 East 32nd Street, New York.

This new laboratory was built and equipped especially for the work. It embodies the advice of the best scientists and architects and the results of sixteen years of practical experience. It was occupied in September, 1908.

The work is carried on at night only, but the laboratory is open day and night for inspection and for instruction in the method of pasteurization.

Numbers of people from all parts of the United States and Canada, health officers and other public officials, physicians, medical students, High School classes, trained nurses and others interested in babies' welfare avail themselves of this opportunity. Thus the laboratory has become a practical training school for the Pasteurization and Modification of milk.

DESCRIPTION OF PASTEURIZATION AND MODIFICATION.

ALL the work of modifying and pasteurizing the milk is carried on in the Nathan Straus Laboratory, at 348 East 32d Street, New York City. (See illustration on opposite page.) Work starts at 10 o'clock P. M., with the flushing and steaming of every part of the laboratory, the tiled floors and enameled walls permitting the process. Then the windows are opened at top and bottom to air and cool the room.

Water is filtered and boiled to scald and sterilize all milk utensils, such as the cream separator, bottle filling machines, milk tanks, modifying cans, pails, etc. Then the tanks are chilled to receive the milk.

Water for use in modification is filtered, boiled and drawn off into sterile cans, which are placed in large pasteurizers, cooled by chilled water and cold air. This water is used later in certain modifications.

Water is also filtered and boiled to prepare barley water and oat water, which are used in modification. The barley and oatmeal are boiled in 20-gallon steam kettles for two hours in order to bring them to the desired consistency. They are drawn from the boilers by a faucet through sterile cheese cloth into sterilized cans and kept until used. One man gives his entire attention to these preparations, weighing carefully all ingredients — sugar, barley and oat flour. (See illustration, page 34.)

ONLY CERTIFIED MILK USED.

In regard to the raw milk. Only "Certified Milk" is used. Certified milk is the very highest grade of milk obtainable. It is certified by the County Medical Society to contain not more than 10,000 bacteria per cubic centimeter. At first glance this does not seem very pure; but when

In November, 1914, 191 tuberculous cows were taken from one dairy herd of 632 animals. The milk from these cows had been "certified" by Dr. Coit, of the Essex County Medical Milk Commission.

In December 72 tuberculous cows were found in a herd of 86 on a "model" dairy farm.

Dr. Lederle, Health Commissioner of New York City, says: "No inspection can make milk entirely safe for infants. Compulsory pasteurization and the classification of all milk will enable us really to safeguard the milk supply."

The Second International Congress for the Protection of Infants (Gouttes de Lait), held in Brussels, September, 1907, resolved "That milk for children should be boiled, sterilized, or pasteurized — not to be used in its raw state."

"In pasteurization only, supplemented by conscientious and thorough inspection, will be found a solution of the problem of a pure milk supply."— N. Y. Medical Record.

Dr. Leslie L. Lumsden writes that "to prevent the spread of typhoid infection in the milk supply of cities * * * pasteurization of the milk * * * is the best measure."



MODIFICATION TABLE.

Showing how Milk Sugar, Oatmeal, Barley Flour and Cane Sugar are kept, weighed, measured and mixed.



(a) MILK HEATER; (b) SEPARATOR; (c) BOTTLE FILLING MACHINE.

we consider that only one per cent. of the city's supply of milk measures up to this standard and that ordinary milk frequently has millions of bacteria per c.c., we realize that "certified" milk is of a high quality indeed.

The milk arrives at 12 o'clock midnight. The outsides of the cans are all washed off before being placed on the elevator to be taken up to the laboratory floor. As many cans as can be handled at one time are then brought up for modification; the remaining ones are placed in cold storage for use as more milk is needed as the work goes on.

MODIFICATION.

The modification starts immediately. The milk, which must be delivered at a temperature of not more than 40° F., is now poured into one of the tanks on the balcony and through a silver-lined pipe run into a heater which warms it to about blood heat (80° to 85°). (See illustrations on pages 34 and 36.) The heater is also connected by pipes with a "Separator," which separates the milk into its parts of milk and cream. Then it is re-combined in different proportions for the different formulas. Each formula is now made up in its separate turn on the modification table, where each ingredient is measured and weighed. (See illustration on opposite page.)

The modifications are made up according to the prescriptions printed on page 44. These formulas have been devised to meet the needs of nine hundred and ninety-nine out of a thousand babies. In view of the great number of babies supplied with milk and the large quantity modified and pasteurized daily, it is impossible to provide modifications on individual prescriptions, and experience has shown that one of the regular formulas usually suits every case.

The cans, marked to correspond with the formulas, are filled with these mixtures and carried to the balcony. There the mixtures are poured through strainers and several layers of sterile

"Consumption is the last verse of the song of which the first verse was sung in the infant's cradle."—Prof. von Behring, in lecture at Stuttgart, Germany, Dec. 17, 1906.

Tuberculosis in the children of Massachusetts to a considerable extent is due to drinking raw milk from infected cows, according to a report made in February, 1916, by the Milk Board of the State Department of Health.

The typhoid death rate in New York City averaged 14.78 per 100,000 population from 1905 to 1909. It was 3.8 in 1916. Dr. C. F. Bolduan attributes this "to the effective chlorination of all the Croton water and the effective pasteurization of the milk supply."

Frederick Emerson and Max Levine, of the Iowa State College, report an outbreak of paratyphoid in Ames, Iowa, 31 cases, due to the use of infected milk. Fischer reports 50 cases traced to a milk supply infected by two cows having enteritis. Gram traced 16 cases to milk.

In February, 1916, Drs. J. C. Geiger and F. S. Kelly, of the Bureau of Communicable Diseases of California, reported that an outbreak of 12 cases of typhoid fever in Richmond had been definitely traced to a certain dairy, but 40 or 50 people in Berkeley drank milk from the same dairy and not one of them was infected. However, the milk supplied in Richmond was raw; that used in Berkeley was pasteurized.



BALCONY AND BOTTLE FILLING MACHINES.
(Showing pipe connection.)



PASTEURIZING OVENS.

cheese cloth, into the corresponding reservoirs. These are set in tanks cooled by the cold-storage system to keep the milk at the low temperature of 40 to 45 degrees while the work is going on. (See illustration on opposite page.)

FILLING THE BOTTLES.

Meanwhile the bottles, 42 in a crate, have been taken from the oven, loaded on trucks, and rolled up to one end of the filling machines. (See illustration on opposite page.)

These machines are set to fill three-, six-, eight- and sixteen-ounce bottles, and are supplied by silver lined pipes running from the tanks in the balcony to the filling machines.

Each machine is served by two men. The first man takes a crate of bottles from the truck, places it in the machine, and each bottle in the crate is automatically filled with just the required quantity. The other man takes the crate of filled bottles from the machine and places it on the table for corking.

The stoppers are made of china and metal, with a rubber washer, which closes hermetically in the process of pasteurization. The stoppers and washers have been sterilized and the washers are frequently replaced by new ones.

PASTEURIZATION.

The crates are then placed on trucks, each truck holding nine crates, and are rolled into the pasteurizing ovens, each pasteurizer holding three trucks. (See illustration on opposite page.)

The steam is admitted until the temperature in the pasteurizer reaches 157° F. This temperature is maintained for twenty minutes. Then the bottles are cooled; first by the admission of cold air (to take the greatest heat out of the milk and prevent the bottles from cracking) and then by a spray of very cold water. By this method they are cooled in ten minutes to below 50° F.

"In the first place we know the germ—the cause. We know whence it comes—the two great sources, the sputum of affected individuals—that is of persons affected with consumption—and the milk of tuberculous cows."—Dr. William Osler, Regius Professor of Medicine, Oxford.

"The fight won by Dr. W. A. Evans, formerly Commissioner of Health in Chicago, that all milk not supplied from tuberculin tested cows should be pasteurized, is merely another indication of the widespread recognition being given to the importance of pasteurization."

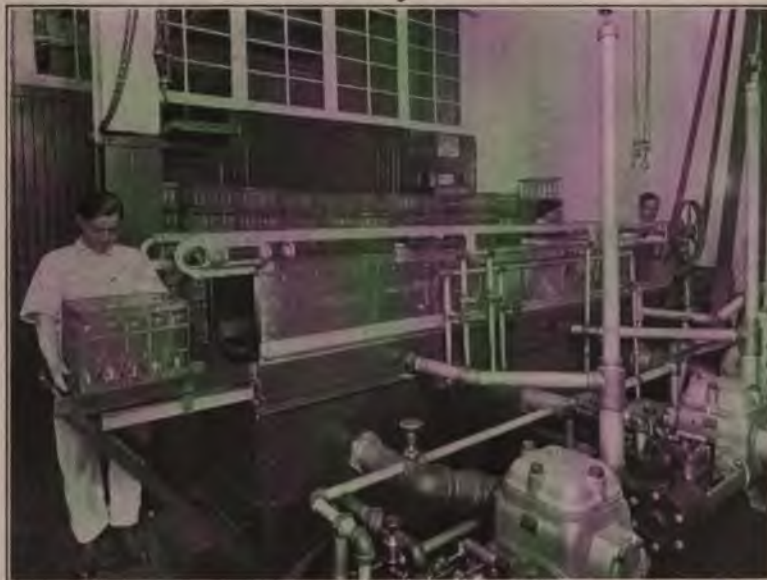
"In view of the fact that from 6 to 7 per cent. of the samples of the average market milk contain bovine tubercle bacilli, let us urge, by education and otherwise, that all milk, unless derived from tuberculin tested animals, be pasteurized or scalded."—Dr. George M. Kober, President National Association for the Study and Prevention of Tuberculosis, at annual meeting at Seattle, June 15, 1915.

"For economic reasons, and in recognition of the process as a means of eliminating certain risks which cannot be completely eliminated in any other way, the pasteurization of milk is certain to be the general practice in this country."—S. H. Ayers, U. S. Agri. Dept. (Bulletin 342).

"In a series of 62 successive necropsies (of children) tuberculosis was found in 25, and was considered the direct cause of death in 23 cases, and as the contributing cause in the other 2."—C. H. Dunn, American Journal of Diseases of Children, Feb., 1916.



DELIVERY AUTOMOBILE.



BOTTLE WASHING MACHINE.

When the milk is sufficiently cooled in the bottles the trucks are rolled out and taken down the elevator, and each formula placed in its own ice box, where it is left until delivered to the various stations.

Much emphasis is put on the cooling process for it is as important as the heating. The low temperature prevents new germs from developing and also preserves the milk in the best condition.

This finishes the process of pasteurization and the milk is now ready for distribution. Samples both of the raw milk and of the pasteurized milk in the several modifications are taken weekly by the County Medical Society and examined bacterially. A sample report, showing the effect of pasteurization, is reproduced on page 45.

DISTRIBUTION OF THE MILK.

The delivery men arrive at six o'clock in the morning and sort out the orders which have been received from the various stations the evening before. They place the crates of milk on trucks and roll them into automobile delivery wagons. (See illustration on opposite page.) These wagons are built as ice boxes, with ice on top, and have been cooled the night before, so as to be ready to receive the milk. In Summer, in addition to this, chopped ice is put on the tops of crates. In summer also, ice is supplied to the people who call for milk in order to enable them to keep it cool until they reach their homes.

On the return trip the drivers bring back all the empty bottles and china corks from the different stations. The bottles are assorted as to size and formula, and washed in a wyandotte solution in an automatic bottle washing machine and are rinsed with live steam. (See illustration on opposite page.) After the bottles are washed and sterilized they are taken in crates to a large baking oven on the pasteurizing floor and left there at a temperature of 200 F. until they are used in the night. The corks are soaked in a solution of soda preparatory to sterilization and

"Nathan Straus is the man to whom the mothers of America will some day erect a monument when they realize what he has done."
—John Spargo.

"All health officers with one or two exceptions advocate the pasteurization of milk. In 1908 there was opposition from the theorists and some from the men who have had charge of regulating the milk supplies of cities. Since then, there has been a marked change in sentiment. All of the men in the work are advocating it, and the theoretical camp has a great majority that favors the method."—Dr. W. A. Evans, Chicago, Oct. 7, 1915.

The International Association of Milk Inspectors, in session at Washington, D. C., October 30, 1915, adopted resolutions recommending the pasteurization of all milk.

"Of the 800,000 babies who enter the world in a year in Great Britain 100,000 die before one year of age. This means dirty milk or no milk at all—slums, bad food and ignorance."
Geo. Bernard Shaw, Dec., '15

"In Philadelphia there were 2,872 cases of scarlet fever in 1912, and 3,400 cases in 1913. Pasteurization was adopted in 1914 and there were 1,944 cases that year. In 1915 the total was only 1,072."

Walter Weyl, in "Success Magazine," ascribed the great work of saving babies from infected milk to "the enthusiastic impulse of a far-seeing and generous man, Mr. Nathan Straus."



INTERIOR OF TOMPKINS SQUARE PARK STATION.



STATION AT 348 EAST 32nd STREET.

baking before being used again. The cans also are washed in a solution of wyandotte and sterilized with live steam before again being used.

MILK SOLD AT NOMINAL PRICE.

The milk is sold at eight stations in Winter and at eighteen in Summer. (For locations see page 43. Illustrations, pages 40 and 80.) The price is only a fraction of the cost of production and distribution. The 16-ounce bottles are sold at 4 cents; 8-ounce, $2\frac{1}{2}$ cents; 6-ounce, 2 cents; 3-ounce, 1 cent. This makes a day's feedings cost from 6 to 12 cents. The only commercial concern in New York City that modifies milk charges from 50 to 70 cents for a day's feeding, and supplies modified milk only on a physician's prescription.

A nominal charge for the milk is regularly made to avoid pauperization. Where even this small expense is too great a burden, the physician, who is in constant touch with all of the milk depots, reports such cases to the central laboratory and steps are taken to let such families get the milk free. In addition physicians and philanthropic agencies are supplied with books of coupons on which the poor can obtain free milk at any of the Straus stations. One of these coupons is reproduced on page 47.

The milk supplied has been both modified and pasteurized, and is ready for use upon warming. In this respect the Straus work differs from all similar institutions in New York City, for the other milk depots, whether maintained by the city or by private philanthropy, supply only whole milk and the mother has to modify it at home. The Straus milk is unique in that it is the only ready-to-drink milk for babies to be had in the city.

From September 1, 1915, to September 1, 1916, over two million (2,153,963) bottles were prepared and dispensed at the various stations. In the twenty-five years of the work 42,873,181 bottles of pasteurized milk have been thus dispensed.

"All milk should be pasteurized as tuberculosis in cattle is on the increase."—Dr. Hermann M. Biggs, N. Y. State Health Commissioner.

An investigation made in 1914 indicated that 500,000 of the 1,500,000 dairy cows in New York State were tuberculous.

Septic sore throat, a violent form of tonsillitis, is often caused by germs carried in raw milk. From this source Boston had 1,043 cases; Chicago over 10,000 cases; Baltimore, Md., 602; Cortland, N. Y., 669.

"There are often more germs in a drop of milk than in a drop of sewage."—U. S. Hygienic Laboratory Bulletin No. 41, p. 421.

"One of the pioneer crusaders against tuberculosis in the Empire City is Mr. Nathan Straus. He has saved more little children from premature death by his public efforts, his generosity, and his intelligence than perhaps any other man in the world."—The Freeman's Journal, Dublin, Oct. 17, 1907.

"One serious difficulty heretofore has been that we have not understood thoroughly the science of pasteurization. This has been removed and objections to pasteurization with it. Rapidly the opposition to the methods for which Mr. Straus has fought so long is disappearing. It can be safely said MR. STRAUS HAS WON HIS FIGHT."—Dr. Charles E. North, Consulting Sanitarian, Member N. Y. Milk Committee, to the Commission on National Milk Standards, Jan. 23, 1912.



INTERIOR OF OLD LABORATORY IN AVENUE C.
Bottle Filling Machine.



INTERIOR OF AVENUE C LABORATORY.
Pasteurizing Ovens.

MEDICAL ASSISTANCE IN CONNECTION WITH THE MILK STATIONS.

NO important step has ever been taken in connection with the Nathan Straus Pasteurized Milk Laboratory without the advice or approval of the most eminent children's physicians in the country. These physicians have also supplied all the formulas.

To carry out further the idea of complete medical supervision a doctor is attached to the laboratory. This experienced children's physician meets the mothers who buy the milk regularly at the various stations. His schedule of hours is so arranged that he is at each of the stations two or three times a week.

Any mother who wishes to have either directions as to the care and feeding of her child or directions how to treat it in case of illness can obtain this advice gratis from the physician. By attending each one of the stations regularly he is able to keep in constant touch with each baby fed on the Straus milk, and to prescribe at what time it is best to change from a formula suitable for a younger child to a formula suited to an older one. The physician keeps a card record of the condition and weight of each child that comes under his care.

In addition to the oral advice, instructive leaflets in several languages are distributed at each one of the stations (see page 46).

THE NATHAN STRAUS INFANT MILK STATIONS.

IN NEW YORK CITY.

OPEN ALL YEAR.

348 East 32d Street
54 Market Street
402 West 37th Street
38 Macdougall Street

322 East 59th Street
303 East 111th Street
Tompkins Square Park.
Mount Morris Park

OPEN IN SUMMER.

Battery Park
City Hall Park
Central Park
Seward Park
Educational Alliance Roof

On Recreation Piers:
East 3d Street
East 24th Street
East 112th Street
Barrow Street
West 50th Street

FORMULAS.

USED IN THE MODIFICATION OF MILK AT THE NATHAN STRAUS LABORATORY.

The milk is modified according to the following prescriptions and then pasteurized:

Formula by Dr. A. R. Green for
1st to 4th Week:

$\frac{3}{4}$ ounces of 16% Cream.
3 " Full Milk.
19 " Water.
 $1\frac{1}{4}$ " Lime Water.
 $1\frac{1}{2}$ " Milk Sugar.

This mixture fills 8 bottles — each to contain 3 ounces. Feed $2\frac{1}{2}$ hours apart.

Formula by Prof. R. G. Freeman
for 1st to 3d Month:

$1\frac{1}{2}$ ounces of 16% Cream.
3 " Full Milk.
13 " Water.
 $\frac{1}{2}$ " Lime Water.
1 " Milk Sugar.

This mixture fills 6 bottles — each to contain 3 ounces. Feed 3 hours apart.

Formula by Prof. R. G. Freeman
for 2d to 6th Month:

18 ounces of Full Milk.
 $16\frac{1}{2}$ " Water.
 $1\frac{1}{2}$ " Lime Water.
 $1\frac{1}{2}$ " Milk Sugar.

This mixture fills 6 bottles — each to contain 6 ounces. Feed 3 hours apart.

Formula by Prof. A. Jacobi for
3d to 7th Month:

18 ounces of Full Milk.
18 " Barley Water.
1 " Cane Sugar.
20 grains of Table Salt (less than
 $\frac{1}{4}$ teaspoonful).

This mixture fills 6 bottles — each to contain 6 ounces. Feed 3 hours apart.

Formula by Dr. Alfred F. Hess
for 7th to 9th Month:

30 ounces of Full Milk.
10 " Oat or Barley
Water.
 $1\frac{1}{2}$ " Cane Sugar.
30 grains of Table Salt (about $\frac{1}{4}$
teaspoonful).

This mixture fills 5 bottles — each to contain 8 ounces. Feed 4 hours apart.

After 9th Month:

Full pasteurized Milk, 8 ounces
every four hours.

To make one quart of Oat or
Barley Water: Boil 2 tablespoonfuls
of the flour in a quart of water until
it is reduced to half the quantity;
then add sufficient water to make up
the quart.

BACTERIA IN CERTIFIED MILK BEFORE AND AFTER PASTEURIZATION.

ONE OF THE RECENT REPORTS OF THE WEEKLY TESTS OF THE
STRAUS MILK.



THE MEDICAL SOCIETY ^{OF THE} COUNTY OF NEW YORK. MILK COMMISSION.

MEMBERS OF THE MILK COMMISSION.

CHAIRMAN, E. K. DUFFAN, M.D.
136 EAST 56TH ST.
SECRETARY, ROWLAND C. FREEMAN, M.D.
211 WEST 57TH ST.

DR. LONG, M.D.	W. H. PARK, M.D.
H. D. CHAPIN, M.D.	WALTER L. CAMP, M.D.
BENNY KOSLE, M.D.	THOS. S. BOUTWORTH, M.D.
A. JACOB, M.D.	C. M. SWIFT, M.D.
W. F. ROOSTROP, M.D.	J. E. WINTER, M.D.

OFFICE OF INSPECTOR.
THE UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE
333 EAST 36TH STREET

Mr. Nathan Straus,
Sir:-

NEW YORK. January 8, 1917.

The counts of the milk taken at your Laboratory last week for examination are as follows:-

Certified:-Borden's Howell cans, No. 1--5,400 colonies per cubic centimeter

2--3,600
3--3,200
4--4,000
5--4,700
6-- 7,700
7--11,900
8-- 6,800
9-- 6,900
10-- 4,400
11-- 7,200
12-- 3,800
13-- 3,500
14-- 6,500

Modified, Pasteurized:-Formula, No. 1-- 100

2--no growth in 1/100
2B--" "
3--" "
4--" "

Whole milk no growth in 1/100

LEAFLET DISTRIBUTED AT ALL THE STATIONS IN SEVERAL
LANGUAGES.

Nathan Straus

PASTEURIZED MILK LABORATORIES

Founded 1892

NO. 348 EAST 32d ST., NEW YORK.

ADVICE TO MOTHERS.

BRING the baby to the milk depot and the doctor will decide, according to its age and general health, with which mixture it should be fed.

During the first month give the bottle every three hours, later every four hours. Never any sooner because the baby cries. It does not cry because it is hungry; on the contrary, it probably feels uncomfortable because it has had too much, or because it is soiled, or because it is sleepy.

Keep the bottles of milk in a cool place and warm each one, just before use, by immersing it, still corked, in hot water. Never pour the milk into another vessel, but let the child nurse from the bottle in which it comes. Do not add anything to the milk.

Shake the bottle, so that the cream or barley water, as the case may be, becomes mixed with the milk.

Then remove the cork, rub off the neck of the bottle with a clean cloth, and put on the freshly washed nipple.

Let the baby nurse slowly—it should take from ten or fifteen minutes for a feeding. Raise the child several times during nursing, so that the gases can escape.

Wash out each bottle, as soon as the child has finished, with hot water in which some soda has been dissolved, then fill it with clear water. After each nursing wash the nipple and leave it in fresh water.

Let the baby sleep from six to ten hours during the night without a feeding.

If you have no bath tub, give the baby daily a sponge bath from head to foot and dry it carefully with a warm towel. Also wash it off each time you change the diaper.

The diapers must always be washed when soiled or wet; otherwise the baby will get chafed and sore.

Give the child

During first month —
 8 three-ounce bottles a day, 1 every 2½ hours.

From first to third month —
 6 three-ounce bottles a day, 1 every 3 hours.

From second to sixth month —
 6 six-ounce bottles a day, 1 every 3 hours.

From third to seventh month —
 6 six-ounce bottles a day, 1 every 3 hours.

From seventh to ninth month —
 5 eight-ounce bottles a day, 1 every 4 hours.

After nine months —
 4 eight-ounce bottles pasteurized full milk, 1 every 4 hours.

Do not let the baby have anything but milk.

If baby does not seem perfectly well or does not digest the milk properly, consult a physician at once.

NATHAN STRAUS PASTEURIZED MILK.

WINTER DEPOTS.

104

SERIES 1912

THIS COUPON IS GOOD AT ANY OF THE FOLLOWING DEPOTS:

348 E. 32d Street.	54 Market Street.	402 W. 37th Street.
303 E. 111th Street.	322 E. 59th Street.	38 Macdougall Street.
Tompkins Square Park, 7th Street and Avenue A.		
Mount Morris Park, 116th Street near Madison Avenue.		

AND AT THE FOLLOWING SUMMER STATIONS:

Battery Park	East 3rd Street Pier
City Hall Park	East 24th Street Pier
Central Park	East 112th Street Pier
Seward Park	West Barrow Street Pier
Educational Alliance	West 50th Street Pier
Roof Garden	

—FOR—

Five 6 oz. bottles, Formula No. 1,	Eight 3 oz. bottles, Formula No. 3,
or Five 6 oz. " " No. 2,	or Eight 3 oz. " " No. 4,
or Two 16 oz. bottles Pasteurized Unmodified Milk.	
or Four 8 oz. bottles Pasteurized Unmodified Milk.	

Deposit required on bottles from everyone: 3 cents on each 16 oz. bottle; 2 cents on each 6 or 8 oz. bottle; 1 cent on each 3 oz. bottle; 2 cents on each stopper. This deposit is refunded on return of the bottle.

THIS TICKET IS GOOD FOR ONE DAY'S FEEDING.

COUPON ON WHICH FREE MILK IS SUPPLIED.

VERDICT OF THE U. S. GOVERNMENT.

In his introduction to "Milk and Its Relation to the Public Health" (the official report of the Government Investigation of the Milk Problem) Surgeon-General Wyman said:

"References will be observed to the achievements of Mr. Nathan Straus in promoting the use of clean pasteurized milk for infants and the establishment of infants' milk depots both in the United States and abroad, and it is proper here to give recognition to his philanthropic and successful efforts."

Dr. John W. Kerr, in the section of the report on Infant Milk Depots, said:

"Mr. Nathan Straus' interest and philanthropy have been potent factors in extending the movement in New York and other cities of the country."

Dr. M. J. Rosenau, then Director of the Hygienic Laboratory, Washington, now Professor of Hygiene and Preventive Medicine at Harvard, in the section of the report on Pasteurization, said:

"No discussion of the subject is complete without recognition of the debt the world owes to Mr. Nathan Straus for his early and persistent advocacy of pasteurization and the establishment of his infants' milk depots. Through his influence and philanthropy this movement has now spread to many cities of this country and abroad."

CANADA'S REPORT ON THE NATHAN STRAUS WORK.

The report of the Ontario Government Milk Commission, published in 1910, says:

"In visiting the Nathan Straus Laboratories in New York your Commission doubtless visited what might be described as the chief centre of pasteurization influence on the continent. It was quite evident that the system of pasteurization as carried on at this laboratory was as nearly perfect as it is possible for science and philanthropy to achieve.

"It was quite evident also that pasteurization meant something different when it bore the name of Straus than when it adorned the label of the average milkman as an advertising catchword. The rooms were large and light and spotlessly clean and the pasteurization plant of the most up-to-date standard, but aside from this there were two outstanding features which should be carefully noted.

"In the first place the milk is clean milk, certified milk in fact. This precaution is taken by Mr. Straus to avoid any suggestion of 'pasteurizing dirt.'

"In the second place the milk is bottled and sealed before it is pasteurized. This is done to prevent any possibility of contamination between the pasteurizing and the bottling process.

"The milk is sold at actually what it costs on the farm, and so the cost of the expensive pasteurization plant, doctors and distribution machinery, must be borne by some one. It is borne by Nathan Straus and it is said to cost upwards of \$100,000 a year. This is Mr. Straus' philanthropy. It is perhaps not fair to describe this deficit as a 'loss.' Its returns are in the benefits conferred on humanity, in the lives it saves to brighten homes where the struggle for daily bread leaves little time for joy."

THE ADOPTION OF PASTEURIZATION

*New York City's Milk Supply
The Fight for Pasteurization
Real Pasteurization and
"Commercial"*

*New York City's Regulations
Adoption of Pasteurization by
Chicago*

*Attitude of New York State
Crisis in Mr. Straus' Work
Cities that Require or Encourage
Pasteurization*

MOTTO

**For all who would aid in the fight against the
Great White Plague:**

**MEDICINES AND HOSPITALS ARE
POSSIBLE CURES
WHILE
PASTEURIZATION IS POSITIVE
PREVENTION.**

Ottawa, Wednesday, June 10, 1908.

Addressing the Canadian Medical Association here, Dr. Hastings, Medical Officer of Health, of Toronto, made the following remarkable statement:

"If the truth were known, 15,000 of the 30,000 children who die in Canada annually might justly have the epitaph, 'Poisoned by impure milk,' placed on their gravestones."

NEW YORK CITY'S MILK SUPPLY.

THE control of the milk supply of New York City, when Mr. Straus began his work, was purely commercial. The chief concern of the Health Department was to see that the milk was not deficient in fats and other milk solids, that it was not adulterated and that preservatives were not used. The use of "swill" milk had been forbidden in 1873. The watering of milk had been prohibited in 1876.

Mr. Straus' work began in 1892, but his active campaign dates from the Fall of 1894, after practical experience had demonstrated the correctness of his methods.

Then his first magazine article, "How the New York Death Rate was Reduced," was printed in "The Forum" in November, 1894. (See page 179.) The following year the Health Department established chemical standards for milk and in 1897 began to exercise sanitary control of milk shops, requiring that permits be taken out by all dealers.

Mr. Straus was distressed in 1897 over the excessive death rate among the city's waifs, in institutions on Randall's Island. Early in 1898 he erected a pasteurization plant on the Island. Without any other change in the regimen or diet, except that the milk was pasteurized instead of being used raw, the death rate dropped from an average of 41.81% for the years 1895-7 to an average of 21.75% for the next seven years. (See pages 204-205.)

While this demonstration was under way, the Health Department, in 1900, required the cooling of milk in transit. But not until 1902 was the first inspector sent out from the City to look into the sources of supply. In 1905 inspection of creameries began, in 1906 the Department undertook systematic inspection of dairies. Thus gradually were concessions made to the public sentiment aroused by Mr. Straus' repeated efforts to induce the City to secure to the people a safe milk supply.

From the start Mr. Straus urged that the municipal authorities owed it to the babies and their mothers to protect the lives of the little ones. On November 15, 1900, he put this strongly in a statement, "Why the Distribution of Pasteurized Milk Should be a Function of Every Municipality." (See page 201.)

On December 4, 1905, Mr. Straus reiterated this truth in a statement, "Pure Milk Supply a Municipal Duty." (See page 206.) On this occasion he emphasized the importance of pasteurization in preventing tuberculosis. This was received with incredulity, but about this time Professor E. von Behring, of the University of Marburg, Germany, discoverer of the anti-toxin for diphtheria, published his famous lecture on "The Suppression of Tuberculosis," in which he stated that "the milk

fed to infants is the chief cause of consumption." About the same time, Mr. John Spargo made an impressive appeal to the public by publishing a book entitled, "The Bitter Cry of the Children," which was an urgent popular plea for the protection of babies from infected milk and a warm commendation of Mr. Straus' work as "blazing the way for municipal and State enterprise."

The same year the Women's Municipal League, of New York City, under the leadership of Mrs. Josephine Redding, gave energetic support to Mr. Straus' demand that the municipality require or provide for pasteurization of the City's milk supply.

The agitation resulted in a conference at the Academy of Medicine on November 20, 1906, at which Mr. Straus submitted a statement, "Pure Milk or Poison?" (See page 211.) Although opposition was keen, the advocates of raw milk could not escape the fact that security against disease could be had only by pasteurization.

On Feb. 12, 1907, a mass meeting at Cooper Union protested against the failure of the Health Department to adopt Mr. Straus' plans for the saving of lives. "The New York Medical Record" demanded pasteurization in a series of editorials. On March 20, the Academy of Medicine approved the process. On October 18 the New York City Federation of Women's Clubs, under the leadership of Mrs. Clarence Burns, urged the adoption of pasteurization.

An ordinance was introduced in the Board of Aldermen on February 12, 1907, requiring the pasteurization of the city's milk supply. Mr. Straus appeared before that body on February 21 (see page 215), and on March 7 (see page 217), urging that the babies be protected from raw, infected milk by requiring pasteurization. He was bitterly opposed by a combination of milk distributors, physicians and social workers who set up the idea of "clean raw milk," while the Health Department insisted that more inspection was the remedy. Finally the forces allied against the babies, with the aid of certain politicians, defeated the ordinance on May 21.

Meanwhile Mayor McClellan appointed a special Milk Commission headed by Dr. Jacobi. This Commission, on May 24, 1907, reported that "raw milk may be harmful on account of its containing the germs of tuberculosis, typhoid fever, scarlet fever and diphtheria" and because of "an excessive number of ordinary germs causing diarrhoeal diseases in infants."

Besides recommending increased inspection, the Commission said:

"It has been demonstrated that the high infant mortality in Summer can be materially reduced by providing to mothers clean milk properly modified and pasteurized for feeding babies. In this respect the Straus milk depots have been of very great value, and such agencies should be perpetuated and might wisely be increased.

"Notwithstanding, after all safeguards that may be imposed by education and otherwise, there will be cases in which unsafe milk will be produced or offered for sale and all such milk must be judged on its merits.

"The Commission, therefore, recommends that the Board of Health should, according to circumstances, require efficient sterilization or pasteurization of all milk which it finds unsafe for consumption as raw milk, on account of a suspicion of the presence of tuberculosis or other disease in the cows or unsanitary conditions at the dairy or a persistent high bacterial content."

The only immediate effect upon the Health Department was an order in 1907 requiring all producers and handlers of milk to make weekly reports to the Department whether there were any cases of contagious diseases on their premises or among their help and if so, to cease selling milk.

The most important assistance in Mr. Straus' campaign for the babies came at this time from the Federal Government. His insistence upon the dangers of raw milk led President Roosevelt in 1907 to order a thorough study of the milk problem by the Public Health Service. Twenty government experts made the investigation. In their report, made public early in 1908, they established the danger of raw milk, and the fact that pasteurization does not change the chemical composition, or impair the taste, digestibility or nutritive qualities of milk. The results of this investigation were summed up by the late Surgeon-General Walter Wyman in the words:

"Pasteurization prevents much sickness and saves many lives."

The first effect of this report upon the situation in New York City was the attempt on the part of the Health Department to grade market milk.

In 1908 the New York Milk Committee undertook a test of the comparative value of pasteurized and "clean raw milk," and in December the Committee, though originally predisposed toward raw milk, declared in favor of pasteurization, in an open letter addressed to Mr. Straus:

"The Committee approves of the pasteurization of all milk which has not been produced under sanitary conditions, which has not come from tuberculin-tested cattle and cattle otherwise free from disease and which cannot be supplied to the consumer with a sufficiently low bacterial content to offer safety from milk-borne infection.

"The Committee approves of the pasteurization of milk when modified for infants' use in the home."

Just prior to this declaration, the milk dealers themselves began heating milk, not to kill disease germs, but to make the milk keep better, and called the milk thus treated "pasteurized." This led Mr. Straus to issue a warning against the "flash" process called "commercial pasteurization." (See next page.)

The result of this protest was that the Health Department forbade the selling of milk as pasteurized unless it had been subjected to a temperature of from 142 to 145 degrees Fahrenheit for at least 30 minutes. Later the Department required that pasteurization be done by apparatus and processes tested and approved by the Department.

Nathan Straus

PASTEURIZED MILK LABORATORIES

FOUNDED 1882

348-350 EAST 32nd STREET, NEW YORK CITY

THE DIFFERENCE BETWEEN REAL PASTEURIZATION AND COMMERCIAL PASTEURIZATION.

Real Pasteurization means that the milk is exposed to 157 degrees Fahrenheit for twenty-five minutes (five minutes for reaching the temperature and twenty minutes at that temperature) and then rapidly cooled to 40 degrees, according to the system of Prof. R. G. Freeman and other men eminent in the medical world. This process kills all noxious germs and preserves the nutritious quality.

Many mothers are cheated into the belief that they are getting a safe milk when they buy what is described as "commercially pasteurized" milk. Such milk should be labeled "NOT Pasteurized." It is a humbug and a fraud, for it has not been pasteurized at all, but has been treated by a process that merely preserves the milk and keeps it from souring; it does not kill the disease germs. It does more harm than good, for it enables dealers to keep bad milk and to market it when it is old and stale. It deceives mothers who know that pasteurized milk is good for their babies, and who do not know that "Commercially Pasteurized" milk is preserved milk.

Commercially pasteurized milk is milk exposed to heat for forty seconds, which does not destroy the pathogenic (disease) germs, but tends to give them a better chance to propagate. Unfortunately the so-called "Pasteurized Milk" which is now being sold in this city is mostly "Commercially Pasteurized." The using of the term "Pasteurized" in connection with such milk should be prohibited by law.

New York, Nov. 28, 1908.

Nathan Straus

[The "commercial pasteurization" condemned above is that done by the "flash" process. One of the results of Mr. Straus' protest has been the development by Dr. Park and others of "holding" processes of pasteurization, by which the milk is held at the required temperature long enough to assure killing the disease germs. These systems are used commercially with success. [Dr. Louis P. Hamburger, of Baltimore, writing to Mr. Straus on July 26, 1912, told of epidemics of septic sore throat traced to milk in Eastern Massachusetts, Baltimore and Chicago. Of the Chicago epidemic he wrote:

["The dairy along the route of which cases of septic sore throat developed employed the 'flash' method of pasteurization. The nurses of the Michael Reese Hospital were supplied by this dairy and the majority of them were attacked by the disorder. Children who were patients in this hospital drank of the same supply, but not one of the little ones suffered from sore throat. The explanation was readily discovered. The hospital authorities did not rely on the dairy's pasteurization in the case of children, but pasteurized their supply in the hospital under accurate and effective conditions."]

Mr. Straus at this time, on December 20, 1908, in a statement, "Why the Death Rate Does Not Go Down" (see page 252), showed the necessity for vigorous measures to stamp out tuberculosis in the dairy herds.

Early in 1909 Mr. Straus had an interview with Mr. J. Pierpont Morgan on the dangers of raw milk and later had an examination made of the financier's dairy farm at Highland Falls, N. Y. On February 9, Mr. Straus wrote to Mr. Morgan:

My physician reports to me that you have probably the best example in the country of a scrupulously clean and sanitary farm, but you don't pasteurize the milk. You pasteurize everything but the milk.

On August 16 of the same year tuberculosis was discovered in the herd, composed entirely of cows of notable pedigrees, and one-third of the valuable herd was killed on orders cabled by Mr. Morgan, who was then in Europe.

On April 12, 1909, Mr. Straus again appeared before the Board of Aldermen, insisting that the public health required the pasteurization of milk. His statement, "Why the City Should Require Pasteurization," appears on page 253. Again was he opposed by milk distributors and advocates of "clean raw milk," though Mr. Straus had proved that such a commodity could not be had. Subsequently, in a letter on April 29th to the Chairman of the Committee in charge of the pasteurization ordinance, Mr. Straus appealed to the Board to "Shield the Babies from the Milk that Kills." (See page 256.) But the forces arrayed against the babies again prevailed.

On October 22, 1909, Mr. Straus addressed the Board of Estimate and Apportionment of the City of New York on "The City's Duty to Prevent Tuberculosis." (See page 283.)

The following year (1910) the Board of Health passed a resolution advising the public that all milk for drinking should be either boiled or pasteurized.

Thus the Department, under Commissioner Ernst J. Lederle, reversed the policy to which it had too long adhered. The futility of the specious idea of "clean raw milk" was frankly admitted. Pasteurization was officially encouraged.

Recognition of the necessity for pasteurization came rapidly in 1911. The National Commission on Milk Standards, formed in May of that year, under the auspices of the N. Y. Milk Committee, made a tentative report in October, setting up standards desirable in milk production, holding

"That in case of all milk not either certified or inspected, as required in these standards, pasteurization is compulsory."

The National Association for the Study and Prevention of Tuberculosis in 1911, at the urgent solicitation of Mr. Straus, recognized "milk

from tuberculous cattle" as "the medium through which transmission of bovine tuberculosis to human beings most commonly takes place," and recommended "the efficient pasteurization of milk as a safeguard against the transmission of bovine tuberculosis to mankind." (See page 305.)

The American Medical Association, the highest medical authority on this continent, in 1911 warned that milk for human consumption must come from tuberculin-tested cows, "or it must be pasteurized," and condemned the "flash" process that Mr. Straus had denounced in 1908. It is of the highest importance that this "flash" or "commercial pasteurization" be not confounded with real pasteurization.

Commissioner Lederle the same year (1911) announced that on and after January, 1912, the Health Department of the City of New York would require the pasteurization of all milk except that produced and handled under exceptional conditions. This caused a great outcry. The raw milk forces secured delay and such modifications of the order that a large proportion of the milk supply continued to be sold raw.

In May, 1912, the seventeen recognized experts composing the National Commission on Milk Standards, in their final report said:

"The Commission thinks that pasteurization is necessary for all milk at all times excepting certified milk or its equivalent. The majority of the Commissioners voted in favor of the pasteurization of all milk, including certified. Since this was not unanimous, the Commission recommends that the pasteurization of certified milk be optional." (See pages 327-328.)

In the early Fall of 1913 an epidemic of typhoid (1,100 cases caused by the milk of one concern) proved the folly of allowing raw milk to be sold, and on October 28 the rules were revised according to Dr. Lederle's original plan.

When Dr. S. S. Goldwater became Commissioner of Health in 1914 he almost immediately put these rules into force, with the result that by Summer 50 per cent. of the city's milk supply was pasteurized, and on Nov. 13, 1914, upon the outbreak of the "foot and mouth disease," he ordered the pasteurization of the **WHOLE MILK SUPPLY**.

[The daily milk supply of New York City consists of 2,250,000 quarts, produced from 400,000 cows, on 44,000 farms, in seven States. Some 250 special milk cars are required to haul the milk to the city, the distances varying from 50 to 500 miles. Smaller producers ship through creameries, of which there are 700, besides 436 country pasteurizing plants. There are 60 pasteurizing plants and 14,000 milk shops in the city. It has been estimated that 100,000 people are engaged daily in producing, handling and delivering the milk supply of the city.]

Now, theoretically at least, 95 per cent. of the milk sold in New York City is pasteurized. The provision of the Sanitary Code is as follows:

Sec. 56a. All milk or cream held, kept, offered for sale, sold or delivered in the City of New York shall be so held, kept, offered for sale, sold or delivered in accordance with rules and regulations adopted by the Board of

Health and under either or any of the following grades or designations and under no other:

Grade A: *For Infants and Children.*

1. Milk or cream (raw).
2. Milk or cream (pasteurized).

Grade B: *For Adults.*

1. Milk or cream (pasteurized).

Grade C: *For Cooking and Manufacturing Purposes Only.*

1. Milk or cream not conforming to the requirements of any of the subdivisions of Grade A or Grade B, and which has been pasteurized according to the rules and regulations of the Board of Health or boiled for at least two (2) minutes.
2. Condensed skimmed milk.
3. Condensed or concentrated milk.

The section of the Code is supplemented by Regulations. (Pages 58-59.)

The practical effect of these requirements, now in force in New York City, is summarized as follows:

Grade A milk, when sold raw must come from cows free from tuberculosis, as shown by a tuberculin test; it must conform to strict sanitary methods of production and handling, and must not contain more than a limited number of germs. It is distributed in bottles. This is "certified" milk, so called because it is certified by the Medical Milk Commission of the County Medical Society as produced under the prescribed conditions. There are 37 "certified" dairies.

Grade A milk, pasteurized, must come from healthy cows and must be produced under sanitary conditions. The germ content is limited. It is also delivered in bottles.

Grade B is pasteurized milk for use by adults only. This milk comes from healthy cows and is produced under careful methods, but the germ content may be larger than in Grade A milk.

Grade C is milk which is not produced under as careful methods as the above grades. It must be pasteurized or boiled and only be used for cooking and manufacturing purposes.

On December 23, 1915, retail milk stores were exempted from the requirement of obtaining permits from the Department of Health, owing to the belief that the present rigid control of the wholesale milk supply and imperative pasteurization effectually safeguarded the city's milk supply.

Official recognition of Mr. Straus' work in securing the pasteurization of the milk supplies of the city was made by Dr. Hermann M. Biggs, then General Medical Officer of the City of New York, who on January 15, 1913, wrote

"It must be extremely gratifying to you to see how widely your views, in regard to the pasteurizing of milk, are being adopted and it must have been also a special source of gratification to you the other day, to realize that you had taken the initiative and made possible the establishment of the Preventorium at Farmingdale. In my judgment, this initiation will mark the beginning of a most important movement in the tuberculosis work."

Regulations Governing the Grades and Designation of

GRADES OF MILK OR CREAM WHICH MAY BE SOLD IN THE CITY OF NEW YORK	DEFINITION	TUBERCULIN TEST AND PHYSICAL CONDITION	BACTERIAL CONTENT
<p style="text-align: center;">GRADE A</p> <p>Milk or Cream (Raw)</p>	<p>Grade A milk or cream (raw) is milk or cream produced and handled in accordance with the minimum requirements, rules and regulations as herein set forth.</p>	<p>1. Only such cows shall be admitted to the herd as have not reacted to a diagnostic injection of tuberculin and are in good physical condition.</p> <p>2. All cows shall be tested annually with tuberculin and all reacting animals shall be excluded from the herd.</p>	<p>Grade A milk (Raw) shall contain more than 60,000 bacteria per c. c. and cream than 300,000 bacteria per when delivered to the consumer or at any time prior to such delivery.</p>
<p>Milk or Cream (Pasteurized)</p>	<p>Grade A milk or cream (pasteurized) is milk or cream handled and sold by dealers holding permits therefor from the Board of Health, and produced and handled in accordance with the requirements, rules and regulations as herein set forth.</p>	<p>No tuberculin test required but cows must be healthy as disclosed by physical examination made annually.</p>	<p>Grade A milk (pasteurized) shall not contain more than 100,000 bacteria per c. c. and cream (pasteurized) not more than 150,000 bacteria per c. c. delivered to the consumer any time after pasteurization prior to such delivery.</p> <p>No milk supply averaging more than 200,000 bacteria per shall be pasteurized for sale under this designation.</p>
<p style="text-align: center;">GRADE B</p> <p>Milk or Cream (Pasteurized)</p>	<p>Grade B milk or cream (pasteurized) is milk or cream produced and handled in accordance with the minimum requirements, rules and regulations herein set forth and which has been pasteurized in accordance with the requirements and rules and regulations of the Department of Health for pasteurization.</p>	<p>No tuberculin test required but cows must be healthy as disclosed by physical examination made annually.</p>	<p>No milk under this grade shall contain more than 100,000 bacteria per c. c. and no cream shall contain more than 500,000 bacteria per c. c. when delivered to the consumer or at any time after pasteurization and prior to such delivery.</p> <p>No milk supply averaging more than 1,500,000 bacteria per shall be pasteurized in this city for sale under this designation.</p> <p>No milk supply averaging more than 300,000 bacteria per shall be pasteurized outside this city for sale under this designation.</p>
<p style="text-align: center;">GRADE C</p> <p>Milk or Cream (Pasteurized) (For cooking and manufacturing purposes only).</p>	<p>Grade C milk or cream is milk or cream not conforming to the requirements of any of the subdivisions of Grade A or Grade B and which has been pasteurized according to the requirements and rules and regulations of the Board of Health or boiled for at least two (2) minutes.</p>	<p>No tuberculin test required but cows must be healthy as disclosed by physical examination made annually.</p>	<p>No milk of this grade shall contain more than 300,000 bacteria per c. c. and no cream of this grade shall contain more than 1,500,000 bacteria per after pasteurization.</p>

Cream Which May Be Sold in the City of New York.

CES- ARY ORES OR IRIES ODUC- NG	TIME OF DELIVERY	BOTTLING	LABELING	PASTEUR- IZATION
<p>tip. 25</p> <p>th. 50</p> <p>tal 75</p>	<p>Shall be delivered within 36 hours after production.</p>	<p>Unless otherwise specified in the permit this milk or cream shall be delivered to the consumer only in bottles.</p>	<p>Outer caps of bottles shall be white and shall contain the words Grade A, Raw, in black letters in large type, and shall state the name and address of the dealer.</p>	
<p>tip. 25</p> <p>th. 43</p> <p>tal 68</p>	<p>Shall be delivered within 36 hours after pasteurization.</p>	<p>Unless otherwise specified in the permit this milk or cream shall be delivered to the consumer only in bottles.</p>	<p>Outer caps of bottles shall be white and shall contain the words Grade A in black letters in large type, date and hours between which pasteurization was completed; place where pasteurization was performed; name of the person, firm or corporation offering for sale, selling or delivering same.</p>	<p>Only such milk or cream shall be regarded as pasteurized as has been subjected to a temperature averaging 145° Fahr. for not less than 30 minutes.</p>
<p>tip. 20</p> <p>th. 35</p> <p>tal 55</p>	<p>Milk shall be delivered within 36 hours and cream within 48 hours after pasteurization.</p>	<p>May be delivered in cans or bottles.</p>	<p>Outer caps of bottles containing milk and tags affixed to cans containing milk or cream shall be white and marked "Grade B" in bright green letters in large type, date pasteurization was completed, place where pasteurization was performed, name of the person, firm or corporation offering for sale, selling or delivering same. Bottles containing cream shall be labeled with caps marked "Grade B" in bright green letters, in large type and shall give the place and date of bottling and shall give the name of person, firm or corporation offering for sale, selling or delivering same.</p>	<p>Only such milk or cream shall be regarded as pasteurized as has been subjected to a temperature averaging 145° Fahr. for not less than 30 minutes.</p>
<p>ore 40</p>	<p>Shall be delivered within 48 hours after pasteurization.</p>	<p>May be delivered in cans only.</p>	<p>Tags affixed to cans shall be white and shall be marked in red with the words "Grade C" in large type and "for cooking" in plainly visible type, and cans shall have properly sealed metal collars, painted red on necks.</p>	<p>Only such milk or cream shall be regarded as pasteurized as has been subjected to a temperature averaging 145° Fahr. for not less than 30 minutes.</p>

ATTITUDE OF THE STATE OF NEW YORK.
(Published throughout the State in several hundred newspapers, September, 1915)



MORE MILK BORNE DISEASE

PUBLIC HEALTH HINTS

**Prepared Each Week For the Readers of This Newspaper by the New
York State Department of Health.**

Just a year ago this week an epidemic of septic sore throat caused by milk was described in this column and was used as a text for a discussion of the dangers from infected milk supplies. Since last autumn the Sanitary Code has required the grading and labeling of all milk sold in the state, so that purchasers of milk know what they are getting and can make sure of a **SAFE SUPPLY** by buying only Grade A or Grade B **PASTEURIZED** milk. Yet the spread of disease by raw milk still goes on.

Last spring there were two more striking cases to add to the long list of examples of **MILK BORNE DISEASE**. In the city of Poughkeepsie and the neighboring towns there were over 100 cases of **SCARLET FEVER**, with eighteen deaths, traced to infected milk, and in Rockland county there were thirty-four cases of **DIPHTHERIA** caused by another supply.

One may ask how this sort of thing can happen with the increasing care bestowed by farmers upon dairying—care which in many cases will make milk production financially unprofitable at present prices. The answer is that a person suffering from a slight and unrecognized case of disease or perhaps a carrier, a person who while perfectly well is cultivating disease in his throat, may at any time cough over a milk pail or infect the milk from his hands in the act of milking. One cough may spray out thousands of germs and be enough to infect a whole supply. In both the Poughkeepsie and the Rockland county epidemics the original cases on the dairy were so light that **NO PHYSICIAN** was called, and there is **NO WAY AT ALL** in which such danger can be absolutely avoided at the dairy.

There is, however, a sure method of making all milk **ENTIRELY SAFE** before it reaches the consumer—by pasteurization or heating to 145 degrees for thirty minutes—and milk borne disease will be a thing of the past only when this treatment becomes **UNIVERSAL**.

Professor Rosenau of Harvard gives the following list of epidemics which were definitely traced to milk in Boston during a period of five years:

1907. Diphtheria	72
1907. Scarlet fever	717
1908. Typhoid fever	400
1910. Scarlet fever	842
1911. Septic sore throat	2,064

4,095

The lesson was at last learned, and all the large milk dealers of Boston installed pasteurizing plants. There have been no such outbreaks since that time.

The same thing happened in New York. Outbreak after outbreak of typhoid fever and other diseases was traced to milk, and finally all milk except a very small proportion of certified grade was required to be pasteurized. The Bulletin of the New York City Department of Health for July 3 reports that "**NO KNOWN MILK EPIDEMICS** of any kind have been discovered in New York city during the past year."

It would not be possible to require at once the pasteurization of all milk throughout the state of New York. Most of the large dairy firms are, however, ready and willing to supply pasteurized milk as fast as the demand permits. With the requirement of grading and labeling by law the remedy now lies in large part **WITH THE CONSUMER**. If the people of the state demand **PASTEURIZED MILK** it will be provided, and in smaller communities where no such milk is available milk should be pasteurized or scalded before drinking as regularly as meat is cooked before it is eaten.

THE CRISIS IN MR. STRAUS' WORK.

Mr. Straus encountered and overcame pretty nearly every possible form of opposition in his fight for the babies, but, as he often said, he made headway, "not in spite of opposition, but because of opposition."

But in August, 1910, taking advantage of Mr. Straus' absence in Europe, a newspaper personally vengeful against him made a series of bitter and unfair attacks upon Mr. Straus' infant milk depots. Mr. Straus cabled from Berlin ordering the closing of the summer stations and the posting of notices that the other depots would be closed on October 1.

Representatives of New York newspapers met Mr. Straus in London, on his way home, on August 25. To them he said:

"It is true that I intend to close my milk depots in New York and abandon the pasteurization work done there during the last nineteen years. I have come to this decision in order that I may not stand in the way of further progress of the pasteurization movement, which is being hurt by personal attacks on me.

"The criticisms of my work have not been aimed against milk pasteurization, but, for obvious reasons, against me personally. If my connection with the pasteurization movement ceases, that humane work will be judged on its merits alone. With this end in view, I intend withdrawing; but there is no reason why the work of the last two decades should be lost.

"The people have been educated in the need of pasteurized milk, and my Home Pasteurizer offers even the poorest mother the means of continuing the pasteurization after the close of my depots. I have reluctantly decided on this course in order that the cause shall not suffer on account of the animosity of a publisher against me.

"I consider these attacks exceedingly unjust. I cannot always be home, and if I am to be attacked while away I prefer to carry on my work elsewhere."

The New York Milk Committee, which had opposed Mr. Straus' methods, on August 27 issued a statement that the closing of the Straus depots "would be a hard blow to the poor and disastrous to hundreds of babies" and that every effort should be made to prevent such a misfortune. The statement ended thus:

"There can be no doubt that Mr. Straus' work, which he has so munificently maintained, has effected a great saving of infant life. To criticise him is to criticise one of our City's greatest benefactors, and to see his depots shut down would be to witness, as Dr. Lederle says, 'a great public calamity.'"

On September 4 Mr. Straus, on arriving in New York, reiterated his intention to close his depots on October 1. To Health Commissioner Lederle Mr. Straus wrote:

"This action is taken solely because the persistent and malignant attacks have made me feel that the cause of the babies, to which I have been devoted these twenty years, would be better served by my withdrawal from the work.

"Separating myself from the work, the _____ will be robbed of its motive for attacking pasteurization of milk, for its bitterness is directed against me personally, and the cause will no longer be hindered by misrepresentation.

"Naturally I regret that this step seems necessary, but I believe that the principles for which I have stood have been so well proved and the methods that I have applied to the saving of babies' lives have been so thoroughly justified, that the work will go on."

Letters poured in on Mr. Straus pleading with him to reconsider his decision. The newspapers deplored Mr. Straus' decision and urged the city to take up the work. "The Times" said:

"The withdrawal of the milk stations exposes thousands of children to present infection and death. It is not right that a private citizen should be asked to do, at his own expense what the public health agencies should be empowered to do with the city's ample resources."

"The Evening Mail," characterizing the conditions that caused the decision a crime, said:

"That babies will be slain and that white hearses will still laughter is the prospect for the districts where Mr. Straus' philanthropy has given the little ones the chance to live and to battle against adverse conditions."

The Brooklyn "Daily Eagle" said:

"The risk to human life, and especially to the lives of babies, involved in the closing of the Straus milk stations is too great for such a step to be anything less than a public misfortune."

Mr. Arthur Brisbane, in a leading editorial in "The Evening Journal," said:

"Instead of asking Mr. Straus to do more, the public should find means to express to him emphatically its gratitude for what he has done, and especially for the lesson he has taught.

"And it should PROVE ITS APPRECIATION by carrying on his work.

"Now, that he has proved that intelligence and money combined will lower the death rate and save children's lives, it would be nothing less than murder for the cities of this country to ignore the lesson.

COLONY CLUB CONFERENCE.

Meanwhile there were tearful scenes about the Straus booths; mothers asking what they could do to keep their babies well when the depots were closed. But those who were actively engaged in philanthropic work on behalf of the babies were not disposed to let Mr. Straus' work be undone. Prominent leaders met at the Colony Club, and on September 9 addressed this appeal to Mr. Straus:

At a meeting of social and philanthropic workers held at the Colony Club Wednesday morning, September 7th, at the call of Mrs. J. Borden Harriman, the following Resolution was adopted:

"RESOLVED that a communication be addressed to Mr. Nathan Straus, deploring his decision to close his infants' milk depots and seeking a conference with him to determine whether some immediate steps cannot be taken to prevent this end."

The above Resolution was prompted by a conviction on the part of those present, that the closing of your stations will be nothing short of a calamity. It indicates a desire on the part of individuals and philanthropic agencies to co-operate with you in keeping them open.

We appreciate your long and sustained efforts to secure the pasteurization of City milk supplies and to reduce infant mortality thereby, and we recognize that the pasteurization of milk is a public health measure of great importance.

We believe that your depots should be continued and their work extended; and we therefore ask that you will be good enough to meet the following Committee for the purpose of working out a plan to accomplish this end:

Mrs. J. Borden Harriman,
Mr. V. Everit Macy,

Dr. Abraham Jacobi,
Mr. Homer Folks.

Conferences ensued. Mr. Straus readily agreed to support a larger movement for the benefit of the babies, but felt that his own particular work should stop. His attitude was expressed in the following letter:

September 26, 1910.

Mrs. J. Borden Harriman,
Chairman.

My dear Mrs. Harriman:

It is difficult for me to tolerate the thought of the babies suffering and being exposed to disease by reason of the lack of pasteurized milk, which would result from carrying out my announced intention to close my infant milk depots on October 1st.

I am still of the opinion that the cause of pasteurization can best be served by my withdrawal from this work, because the malicious personal attacks made upon me by the _____ hinder the cause, and the _____ would have no purpose for continuing its warfare against the babies if I were to cease to be identified with efforts to save their lives.

But such urgent pleas have been made by the mothers of the little ones and by you and Dr. Jacobi and the people associated with you in the effort to have my work continued, that I feel in duty bound to prolong my service to the babies until your plans can be formed and put into operation.

I will, therefore, keep my milk depots in operation until November 1. Before that time I hope that you will be able to perfect a plan for carrying on the work—not only that that I have maintained, but a far larger and greater work, such as will assure to a still greater number of babies the chance to live.

In this way I hope the campaign so malignantly devised will be brought to naught and that the babies will be surely saved in spite of the _____.

This is my only aim and purpose, and to aid in accomplishing this by the maintenance and multiplication of pasteurized milk depots is my earnest desire, but this can best be brought about by this enterprise ceasing to be my particular work and by its being fathered by such a body as you have formed. Withdrawing to the background and quietly aiding you I may still see the work going forward, without drawing upon the babies the hostile fire of a heartless misanthrope and his mercenary newspapers.

Very sincerely yours.



MASS MEETING AT COOPER UNION.

Popular agitation for the continuance of the depots developed rapidly. A number of business and professional men met at Metropolitan Assembly Hall on September 28, Mr. Louis Lande presiding, and decided to call a mass meeting, which was held at Cooper Union on October 8. The great hall was crowded. Clement G. Driscoll, Commissioner of Weights and Measures, presided. Among the speakers were Hon. John Purroy Mitchel, then President of the Board of Aldermen; Dr. W. A. Evans, Commissioner of Health of Chicago; Professor Irving Fisher, of Yale; Dr. C. E. Nammack, of Cornell Medical College; Dr. Abraham Jacobi, the Rev. J. J. Curran, of Wilkes-Barre; Justice Greenbaum, Judge Rosalsky, Secretary of State Koenig, Rabbi Joseph Silverman, Rev. H. Masliansky, Mr. Arthur Brisbane, Rev. Dr. Thomas R. Slicer, J. N. Francolini and Dr. Antonio Stella.

The meeting was marked by the greatest enthusiasm and was prolonged past midnight.

Such sentiments as these were expressed:

"Mr. Straus has rendered exceedingly valuable educational and practical service. His demonstration has shown what can be done, and if he discontinues it, it will compel the city to take measures to meet the whole problem."—Hon. John Purroy Mitchel.

"The recording angel will write down the name of Nathan Straus as one who loved his fellowmen."—Dr. C. E. Nammack.

"Nathan Straus and his kind are saying by their actions, 'We are our brother's keeper, and also the keeper of our brother's baby.'"—Rabbi Joseph Silverman.

"Nathan Straus has saved individual children, tens of thousands of them, here in this city. His work has compelled this and other nations to realize a sacred duty which will result directly in saving the lives of millions of children in the future."—Arthur Brisbane.

"Those of us who know Nathan Straus know the great heart of the man, know that whatever he does is simply done out of the goodness of his heart."—Justice Samuel Greenbaum.

The 2,500 men and women unanimously adopted the following resolutions:

WHEREAS, Nathan Straus has rendered great public service and set an example of intelligent philanthropy and good citizenship before the whole world by his work, which has saved the lives of tens of thousands of children in this city, as repeatedly attested by officials of the Health Board and by physicians in private practice; and

WHEREAS, The work done by Mr. Straus in New York City is but a part of his work, which has extended to other cities in America and Europe; and

WHEREAS, It is fully proved and unquestioned that the work of Nathan Straus has demonstrated the value and safety of properly pasteurized milk, and has thus actually reduced the death rate in New York City and in other cities; and

WHEREAS, Nathan Straus has carried on this work for years at great financial cost to himself, contributing time and effort, as well as money; and

WHEREAS, Misrepresentations and criticisms which this meeting deplors and condemns have caused Mr. Straus to contemplate and announce a cessation of his most valuable philanthropy;

RESOLVED, That this meeting of citizens, mothers, and fathers, Judges, physicians, and public officials, expresses to Nathan Straus, on behalf of the entire citizenship, deep gratitude, respect, and appreciation for the work that he has done.

RESOLVED, That, in addition to the admirable charity itself, Mr. Straus' great and important work has been the awakening of public conscience, the stimulating of scientific investigation, the universal world-wide recognition of the importance of putting an end to the criminal and unnecessary waste of child-life through milk poisoning;

RESOLVED, That this meeting appreciate the fact that Nathan Straus, more than any other man living, has served and protected the poor children and their mothers;

RESOLVED, That we appreciate fully the fact that the citizenship as a body, and Governments, municipal, State, and National, thanks to Nathan Straus, have had made clear to them their duty toward the children, and should now do at the public expense, on the widest possible scale, the work which Nathan Straus hitherto has carried on singly as an individual at his own personal expense;

RESOLVED, That we urge upon all public officials that it is their duty to inform themselves as to the work that Nathan Straus has done, and the results which he has obtained, and to use their influence and any executive power which they may have under the law to carry on and develop the work of which the usefulness and necessity have been so overwhelmingly demonstrated by the life-long effort of one distinguished citizen, Nathan Straus;

RESOLVED, That while we realize that it seems almost ungrateful to ask anything further of one who has done so much individually, and while we realize that this meeting should confine itself to expressing gratitude for what Nathan Straus has done rather than demand of him further efforts and fresh contributions, nevertheless, relying upon his apparently exhaustless friendship for the poor, we respectfully urge and request him even at great personal sacrifice, to continue his work. We ask him to extend it as long as may be necessary to enable public bodies or organizations of private citizens to show appreciation by putting upon a permanent footing, independent of the life of any one man, the sacred task of protecting children's lives through a proper supply of pure milk at a price within the reach of the poor.

This declaration was warmly indorsed by the newspapers of the city and by its citizens, individually and through representative organizations.

The effect of this meeting on Mr. Straus was best expressed in a letter he wrote on October 16 to Commissioner Driscoll:

"I want to thank you for the splendid appeal that you made at Cooper Union for the protection of the babies, and for your very generous estimate of the services that I have been able to render in the work of saving the defenceless little ones from preventable diseases and their mothers from the cares of sickness and the grief of death.

"Naturally, I was deeply touched by the expressions of the various speakers about my work, but that which pleased me most about the mass meeting was the evidence it afforded of a strong determination on the part of the people to permit no cessation of the efforts to save the babies from the diseases that are borne to them in raw milk.

"Dr. Jacobi's concise and convincing summing up of the proofs of the efficacy of the methods for which I have fought these twenty years leaves no room for doubt as to their correctness.

"What I have been permitted to do through my infant milk stations has been its own reward and I have sought no other, but I have sought and do seek the extension of such life-saving agencies beyond the limits imposed by the means of one man and beyond the span of one man's life, and the mass meeting in Cooper Union encourages me to believe that my dream will be realized, and that the day will come when the slaughter of babies by raw milk will cease, and when every infant will have the health and strength that results from the substitution of properly modified and pasteurized milk for the dangerous raw milk that is now recklessly used in too many cases."

ACTION BY THE ALDERMEN.

On October 11 the Board of Aldermen adopted the following resolution:

WHEREAS, The Hon. Nathan Straus, exemplary citizen, philanthropist, and friend of the poor, who has for many years devoted much of his time and his means to the protection of the lives of the children of the indigent by furnishing a supply of pure milk at a cost within the means of the most needy, has, for reasons best known to himself, discontinued the work in which he was so long engaged, and

WHEREAS, It is to be deprecated that a work, the result of which was so beneficial to a large part of the community, should be discontinued and for which the thanks of our people in general have gone out to Hon. Nathan Straus; therefore,

RESOLVED, That it be the sense of the Board of Aldermen of the City of New York that the Hon. Nathan Straus, if he can find it consistent to do so, continue his splendid efforts in behalf of the poor and needy in the supply of pure milk, or render such service as he alone is capable of in the formation of an organization for the continuation of the work so well begun and furthered through his efforts.

RESOLVED, That the City Clerk be and he is hereby requested to forward an authenticated copy hereof to the Hon. Nathan Straus.

MUNICIPAL RESPONSIBILITY FOR BABIES.

Mr. Straus immediately took up the promise made by President Mitchel, of the Board of Aldermen, writing to him on October 15, 1910, as follows:

"Your forcible letter, read at the mass meeting at Cooper Union last Saturday, has given me great encouragement. It marks an important step forward, when a city official of your standing and of your reputation for persistent effort, gives assurance that the municipal authorities will seriously grapple with the public duty of protecting the babies from the diseases that too often lurk in raw milk.

"When I started my work of supplying pasteurized modified milk for infant feeding, I had no hope that I would ever be able to handle this work effectively alone. The most that I dared to expect was that I would prove to the municipality the vast possibilities of the work in saving of lives.

"I have been enabled, however, to extend the work far beyond the modest dimensions of my original plans, and in so doing to make the demonstration more thorough in the indubitable evidence of an infant death rate now less than half what it was prior to 1892. That the supplying of pasteurized modified milk has been one of the chief factors in this lessening of infant mortality is conceded by practically all authorities.

"Very early in my work (in 1895) I urged the recognition by city authorities of the duty of municipalities to recognize that the purity of the milk supplies was as much the concern of the government as the purity of the water supplies, and I have maintained also that the supplying of modified pasteurized milk for infant feeding at moderate prices was also a proper and necessary municipal function, urging this both on the ground of humanity and because enlightened public policy dictated that the babies should be saved from needless sicknesses and death.

"Gradually this doctrine of municipal responsibility for the babies has made headway until now it is more or less clearly recognized in many cities, and I trust that the day is drawing very near when New York, leading all the world in so many respects, will set itself as a shining example of humanity and true municipal foresight by adopting measures that will absolutely prevent many of the diseases of infancy that now slay the little ones, increase the cost of hospital maintenance and impoverish thousands of families.

"Your ringing statement on this subject leads me to hope that you will persistently force this issue and bring it to pass that all the babies of this great city will have the chance to live and enjoy health, that they may be spared the living death of tuberculosis that is too often dealt out to them in the milk from diseased cows, and that their mothers may escape the tears and bitter grief of the needless loss of their little ones."

Dr. Lederle, the Health Commissioner, President McAneny, of the Borough of Manhattan, and Comptroller Prendergast, with President Mitchel, immediately took the matter up in the Budget Committee of the Board of Estimate with the result that \$40,000 was appropriated in the budget for 1911, adopted October 31, 1910, to making a beginning in establishing municipal milk depots.

Mr. Straus hereby gained what he had fought for from the beginning, namely, distinct recognition of the responsibility of the municipality for the babies and definite assumption of such responsibility.

DECISION TO CONTINUE THE DEPOTS.

Meanwhile conferences with Mr. Straus continued and on October 24 Mr. Homer Folks issued this statement:

"The committee appointed as a result of the meeting of philanthropic agencies held at the Colony Club on Wednesday, September 7, and consisting of Mrs. J. Borden Harriman, Chairman; Homer Folks, V. Everit Macy and Dr. Jacobi, met Mr. Straus at the home of Dr. Jacobi on Monday afternoon.

"The committee told Mr. Straus that the people of the city were under a lasting debt of gratitude to him for his work in preventing infant mortality, and urged upon him that the discontinuance of his milk stations would be a public calamity. Mr. Straus very generously consented to continue them as urged, and hoped that as a result of Mrs. Harriman's committee and others many additional infants' milk depots would soon be established and the work greatly extended.

"He hoped also that the city would ultimately undertake the work to as large an extent as might be required. The committee felt greatly pleased with Mr. Straus' attitude."

FORGET ME; HONOR THE BABY.

Immediately a committee was formed to give a public dinner in honor of Mr. Straus, who, however, declined, saying:

Mr. Henry W. Schloss,
682 Broadway, New York City.

27 West 72d St., Oct. 27, 1910

Dear Mr. Schloss:

I am deeply sensible of the kindly spirit that prompts you and the gentlemen associated with you to propose to give a dinner in my honor, and I am truly grateful for the very generous appreciation of what I have endeavored to do for the babies. Moreover, I am delighted at this additional evidence that the public duty of protecting child life is so clearly recognized by men of affairs that they desire to publicly commend one who has merely tried to do his duty in this matter.

If I were in my usual health I would feel it my duty to overcome the personal embarrassment of such a tribute and accept your kind offer in the spirit in which it is intended, but I have been under the care of physicians since last winter, and have promised them and my family to accept no engagements that might involve any degree of excitement, a full year of quietude having been declared essential to the restoration of my health, which was seriously shattered by twenty years of unceasing efforts to stop the slaughter of the babies.

Your letter touches me so deeply that I make this reply with hesitation and deep regret. Nothing would please me better than to meet my fellow citizens on such an occasion and bid them rally to the defence of the little ones who cannot defend themselves. While I would naturally be gratified at such a demonstration, I would be still more delighted at the opportunity it would give to tell what can be done to ward off sorrow, to save lives and to benefit humanity. I would ask the gentlemen to forget me and to remember that the hope of the Nation and Humanity lies in the cradle. I would ask that the dinner be given in honor of The Baby, and that the diners pledge themselves to strive to give The Baby the chance to live and to enjoy health, protected from the preventable diseases.

But such an occasion would be so stirring to me that my physicians and family will not permit me to risk the excitement, which they tell me might throw me back into that state of nervous prostration from which I am now steadily recovering.

Believe me, nothing short of this prohibition would prevent my accepting your kind offer in the generous spirit in which it is intended.

Very sincerely yours,

NATHAN STRAUS

The committee would not accept Mr. Straus' refusal, but took from his letter the phrase—

**"THE HOPE OF OUR NATION AND
HUMANITY LIES IN THE CRADLE"**

and organized a demonstration unique in the history of New York City.

BANQUET GIVEN BY CITIZENS OF NEW YORK.

On the evening of January 31, 1911, there assembled at the Cafe Boulevard 500 men and women thoroughly representative of the complex life of the metropolis. There were statesmen, financiers, diplomats, army officers, merchants, manufacturers, politicians, editors, jurists, leaders in humanitarian, educational and philanthropic movements, and society folk. This uniquely diversified throng came to pay tribute to Mr. Straus.



(From Souvenir at Banquet in Honor of Mr. Nathan Straus)

Representative William S. Bennet was toastmaster. President Taft, in a telegram, expressed appreciation of Mr. Straus' services. The Hon. John A. Dix, Governor of the State of New York, said:

"It is a pleasure to join with you in paying tribute to an honored citizen, a man of lofty ideals, whose devotion to humanity is world-wide. Honored in this country and other countries because of his devotion to his fellowmen, he has lived a life worthy of emulation by all young men and achieved a business career among us worthy of the highest respect. He has devoted a large portion of his life, means, thought and fidelity to the care of the younger children, and through his tender mercies many thousands of them are living to-day who might otherwise have perished."

Borough President George McAneny said:

"I recognize that Mr. Straus has not only done things for his fellow men, but has taught the city what it ought to do. To Nathan Straus thankfulness is expressed by the uplifted hands of the little children who seek his aid and by the mothers who know that for eighteen years this man had stood for the welfare of posterity. I wish now to propose the health of the lady who through all these years has assisted Mr. Straus by her sympathy and co-operation, Mrs. Straus."

William Randolph Hearst said:

"Mr. Straus' charity is as genuine as it is generous. It flows freely from an upright mind, a kindly heart, an open purse. It blesses the one who gives and the one who receives. It sets a noble example to us all."

Dr. Jacobi declared Mr. Straus had contributed largely to the future welfare not only of this Nation, but of others. Gen. Nelson A. Miles and the Rev. Dr. Robert S. MacArthur paid tributes.

Comptroller William A. Prendergast said:

"The officials of the City of New York have asked me to perform the most pleasant task I have been called upon to perform since I have been in public life. They have asked me to present to you this album containing all their names, with sentiments testifying to their great appreciation; to their great interest in the noble work that you have done for humanity, not only the present generation, but the generations which are to follow."

Mr. Straus replied in a speech, "My One Idea." (See page 295.)

The Committee distributed to the diners a review of Mr. Straus' work, printed in English, German and Yiddish. The account began:

"The name of Nathan Straus is identified the world over with the systematic saving of the lives of babies, for it was he who was the world pioneer in efforts to prevent the slaughter of the innocents by infected milk, and for two decades he has been the militant aggressive champion of the idea that the little ones have the right to live, and that it is the duty of governments, national and municipal, to secure this right for the babies by protecting their food supplies, by pasteurizing the milk that is the chief item in the dietary of the baby.

"Mr. Straus, nearly a score of years ago, found a condition perilous to the public health, with unerring instinct chose a remedy, practically applied that remedy out of his own resources, and after generous expenditures and many years of keen fighting for the truth, has the satisfaction today of knowing that the pasteurization of milk is accepted with singular unanimity by all unbiased scientists.

"This achievement, this demonstration of a scientific fact in advance of the researches of science, is so dramatic that it gives Mr. Straus a title to fame apart from his philanthropies."

PASTEURIZATION IN OTHER CITIES.

WHILE carrying on his long fight for the pasteurization of the milk supply in New York City, Mr. Straus extended his propaganda to other cities and found early and most enthusiastic support particularly in Chicago, which in August, 1908, led all the world by being the first city to require the pasteurization of the milk supply. The story is told in this dispatch printed in August of that year in the New York Evening Mail:

CHICAGO SAYS MILK MUST BE PASTEURIZED.

Chicago, Aug. 8.—This city, under the leadership of Dr. W. A. Evans, Commissioner of Health, has taken the lead in adopting practical measures for the prevention of tuberculosis, being the first city in the world to take definite steps to stop the sale of milk containing the germs of consumption.

The City Councils have passed an ordinance requiring that after January 1, 1909, all milk offered for sale in the city shall be pasteurized, unless it comes from cows that have been tested with tuberculin within a year and that have been proved to be free from tuberculosis.

Similar ordinances have been passed requiring that no butter or cheese shall be sold in the city unless made from the milk of tuberculin-tested cows or from pasteurized milk.

Dr. Evans, in his long fight for the adoption of these measures to prevent the spread of tuberculosis, cited the demonstrations made in New York City by Nathan Straus and the proofs given in European cities by the American philanthropist.

He pointed out that an American layman had taught the whole world how to successfully combat the great white plague, and that the most American of cities ought to take the lead in adopting and enforcing Mr. Straus' practical and efficient scheme for the saving of human life and the curbing of the most dreaded of all diseases.

—New York Evening Mail.

Mr. Straus congratulated Chicago in a letter to Mayor Busse. (See page 251.) Desperate attacks were made upon the pasteurization ordinance, and officers of the State of Illinois endeavored to undo the work of Dr. Evans. Mr. Straus, in a letter to Gov. Deneen, characterized these attacks as "The Putting of Babies in Coffins." (See page 257.) The following year an effort was made to repeal the ordinance. Mr. Straus, apprised of this by wireless while on his way to Europe, appealed to the Chicago City Council by cable. (See page 286.) The ordinance was sustained.

Subsequently the Chicago milk ordinance was invalidated by the courts and the fight for the babies had to be made all over again in 1912. On July 30 of that year, while the new ordinance was pending, Mr. Straus wired Dr. Willis O. Nance, chairman of the Health Committee of the Board of Aldermen:

"The ordinance for which you are fighting means lives of babies saved; its defeat means babies killed; can Chicago hesitate between these alternatives?" The ordinance was adopted.

Gradually, as opportunity offered, the propaganda was carried on in one city and another, until the dangers of raw milk were well understood and health officers and other officials were won over to pasteurization.

New York City fell in line as above related. Philadelphia established compulsory pasteurization in the Spring of 1914. In other cities the cause made progress, either by the force of public demand or through the enlightened efforts of health commissioners.

Now pasteurization is either required or officially encouraged in 46 of the 52 largest cities in the United States. The record is as follows:

CITY	PROPORTION PASTEURIZED	CITY	PROPORTION PASTEURIZED
New York	95%	Boston	82.5%
Philadelphia	90%	Baltimore	65%
Chicago	80-85%	Pittsburgh	—
St. Louis	75%	Buffalo	80-85%
Cleveland	96%	New Orleans	25%
Detroit	95%	Washington	85%
San Francisco	40%	Los Angeles	80%
Milwaukee	90%	Providence	25%
Cincinnati	97%	Louisville	85%
Newark	75%	Denver	50%
Jersey City	95%	Worcester, Mass.	35%
Seattle	70%	Syracuse	33%
Indianapolis	95%	Binghamton	—
Rochester	20%	Scranton	80%
Columbus	75%	Paterson, N. J.	—
Oakland, Cal.	85%	Fall River	10%
Richmond	90%	Lowell	—
Omaha	33%	Memphis	30%
Dayton, Ohio	75%	Grand Rapids	10%
Spokane	80%	Nashville	25%
Montclair	50%	Cambridge	50%
East Orange	50%	Bridgeport	—
Albany	25%	Ogden, Utah	—

The only large cities that do not officially encourage pasteurization are:—

Minneapolis, where, however, 60% is pasteurized.

Kansas City, where pasteurization is "permitted" for high grades, but required for Grade C milk.

St. Paul,

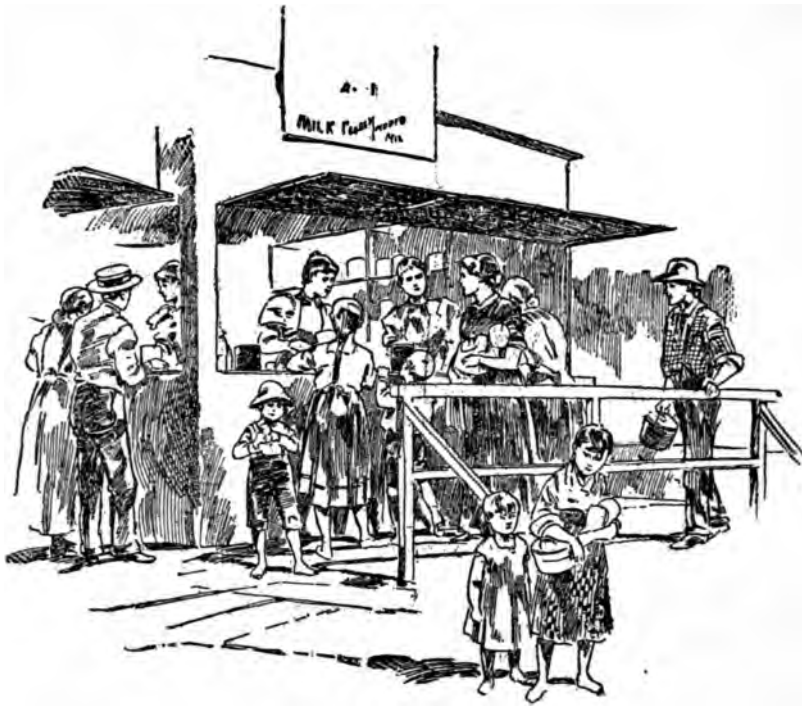
Portland, Ore., where 50% of the supply is pasteurized.

Toledo, where 80% is pasteurized.

New Haven, where 25% is pasteurized.

When Mr. Straus started his work his warnings of the perils that lurked in raw milk were received with incredulity, or with derision, or with open and bitter attacks.

But he persisted, with the result that to-day there is not only almost complete unanimity in favor of pasteurization on the part of medical and scientific men, but pasteurization is an established fact in practically all the big cities of the country.



FIRST NATHAN STRAUS MILK STATION, 1893.
On Pier at East Third Street, New York City.



PASTEURIZING ROOM.
In First Nathan Straus Laboratory
on East Third Street Pier.



CITY HALL STATION, 1894.
First Nathan Straus Station in the
Parks.

(Reproduced from newspaper prints)

INFANT MILK DEPOTS



*The Nathan Straus Stations in New
York City*

Brooklyn Depots

Philadelphia

Chicago

St. Louis

Municipal Milk Stations

Depots in Other Cities

Milk Dispensed by the Glass



**NATHAN STRAUS LABORATORY, 151 AVENUE C, NEW YORK CITY.
Opened in April, 1895.**

[New Laboratory (p. 32) occupied September, 1908]



GROUP OF MOTHERS AND BABIES AT OLD LABORATORY.

THE NATHAN STRAUS DEPOTS IN NEW YORK.

THE first infant milk depot in America (see illustrations on pages 10 and 72) was that founded by Mr. Straus in 1893 on the East Third St. Pier, New York City. This statement does not overlook the fact that as early as 1889 the Good Samaritan (Eastern) Dispensary supplied sterilized milk for infant patients suffering from intestinal disturbances. That was a clinic. The sterilized milk was a remedy dispensed through the apothecary.

Mr. Straus' work was not to treat sick babies, though he always had a physician in attendance to render that service, but to keep babies well by supplying them with pasteurized milk. That was the genesis of the system of infant milk depots that has since been copied in 127 cities in this country and in many places abroad.

Incidentally, in starting this work on a city pier, Mr. Straus was the pioneer in the utilization of the upper stories of piers for the benefit of the people. Out of this grew the establishment of Recreation Piers. (See page 123.)

The demand for pasteurized milk increased so rapidly that in April, 1895, Mr. Straus equipped a laboratory at 151 Avenue C (see illustrations on pages 42 and 74) in the great East Side of New York, for the preparation of milk for the babies. This soon became taxed to its capacity and on September 1, 1908, the work was moved to the present laboratory, erected and equipped by Mr. Straus, at 348 East 32d Street. (Pages 32-38.)

With the increased demand for the milk prepared at the Straus Laboratory, additional stations were opened, until now Mr. Straus maintains eight infant milk depots the year round and eighteen in summer.

Each day more than 2,300 babies are fed on the Straus modified and pasteurized milk, and from 4,000 to 5,000 babies are benefited in the course of a year. In the earlier days no records were kept of the individual babies, as Mr. Straus wished to have the depots as unlike clinics as possible. But since the organization of the Babies' Welfare Association, under the auspices of the Health Department, in 1912, a record has been kept of each baby. Each week a report is sent to the Association showing the number of babies at the beginning of the week, the number added or dropped, the deaths, if any, and the number registered at the end of the week.

These records show that in the past four years while 20,111 babies have been cared for by the Straus depots only six of them died.

Many of the babies are in desperate condition when first brought to the Straus depots, the mothers having in vain tried every other means of keeping them in health. In many cases the babies come from hos-



THE PHILADELPHIA PASTEURIZED MILK SOCIETY.
Filling the Bottles by Machinery.



THE PHILADELPHIA PASTEURIZED MILK SOCIETY.
Placing the Filled Bottles in the Pasteurizing Oven.

pitals which have given up the cases, yet in almost every instance the babies thrive and sickness is rare among them.

The way in which the work expanded is illustrated by the records of the modified and pasteurized milk dispensed. The figures are given by years ended September 1st and are as follows:

YEARS.	BOTTLES.	GLASSES.
1893	34,400
1894	306,446	572,150
1895	589,064	371,360
1896	658,064	576,178
1897	647,728	369,900
1898	567,533	706,140
1899	566,096	783,000
1900	690,240	854,100
1901	791,151	765,000
1902	1,202,287	875,700
1903	1,777,612	692,685
1904	2,233,818	811,090
1905	3,167,871	1,016,731
1906	3,140,252	1,078,405
1907	3,031,510	1,230,130
1908	4,167,675	1,411,017
1909	3,319,063	1,522,998
1910	2,900,675	1,384,021
1911	2,217,512	1,335,363
1912	2,193,684	1,326,100
1913	2,193,210	1,542,419
1914	2,148,119	1,747,984
1915	2,175,208	1,441,580
1916	2,153,963	1,595,447
Total	42,873,181	24,009,498

In addition nearly half a million bottles of barley water have been supplied.

In 1896 Mr. Straus began supplying pasteurized milk in Brooklyn, through the Diet Dispensary, with five stations. This work was subsequently taken over by the Brooklyn Children's Aid Society, which maintains 14 stations.

The Nathan Straus work came under very careful scrutiny in 1903, when Charles Emory Smith, editor of "The Philadelphia Press," becoming concerned over the high infant death rate in that city, sent a medical expert to New York to examine the Nathan Straus method. His report was so satisfactory that Dr. Edward Martin, director of Public Health, accompanied the "Press" expert to New York for a personal investigation and "became convinced that such a plant would work wonders in lessening the appalling death rate among infants in Philadelphia." Mr. Straus gave a \$5,000 plant, which was installed by "The Press" in a building given by the city (see illustration on opposite page) and has been successfully operated for the past 14 years by the Philadelphia Pasteurized Milk Society.

In 1903 the Children's Hospital Society of Chicago formed a Milk Commission to duplicate the Straus work in that city and the plant for this purpose was donated by Mr. Straus.



STATION IN MORNINGSIDE PRESBYTERIAN CHURCH,
NEW YORK.



AUTOMOBILE REFRIGERATOR TRUCK.
In Baby Day Parade, May 11, 1915.

In the same year Mr. Walter Bernays, City Chemist of St. Louis, made a critical study of the Straus work in New York and on his report the St. Louis Provident Association formed a Pure Milk Commission, to which Mr. Straus gave a pasteurizing plant in February, 1904.

In these three cities the work has been carried on successfully, along the lines of the New York depots, with similar effect in reducing the infant mortality rate.

Up to 1908 practically the entire burden of providing wholesome milk for babies in New York City rested upon Mr. Straus and in that year more than four million bottles of pasteurized milk were supplied. About that time private philanthropy began to duplicate Mr. Straus' work, the New York Milk Committee establishing seven stations. The Morningside Presbyterian Church, Rev. Allen W. McCurdy, pastor, followed Mr. Straus' example by opening a milk depot in the church building at Morningside Avenue and West 122d Street. (See opposite page.)

In 1910 the City of New York decided to take up the work and in 1911 opened 15 municipal milk depots, increasing the number to 50 in 1912 and to 59 in 1913, largely through the efforts of the Hon. George McAneny, then President of the Borough of Manhattan.

Now there are in New York City 79 infant milk stations, but the Straus depots are the only ones that supply *modified milk pasteurized in nursing bottles ready for feeding upon warming. The Straus milk is the only ready-to-drink milk for babies.*

The extent to which Mr. Straus' example has been followed is shown by the following record of the number of infant milk depots in leading cities of the country:

CITY.	NUMBER.	CITY.	NUMBER
New York	79	Rochester	12
Philadelphia	25	Jersey City	2
Chicago	20	Providence	4
St. Louis	12	Denver	1
Boston	12	Syracuse	2
Cleveland	15	New Haven	4
Baltimore	2	Scranton	1
Pittsburgh	21	Birmingham	1
Detroit	6	Paterson, N. J.	1
Buffalo	2	Omaha	3
Milwaukee	4	Dayton, Ohio	4
Cincinnati	9	Lowell	1
Newark	2	Nashville	4
New Orleans	15	Cambridge	2
Los Angeles	5	Bridgeport	4
Minneapolis	4	East Orange	1
Kansas City	6	Montclair	1
Indianapolis	6		
Louisville	4	Total	297



TOMPKINS SQUARE STATION.
Model Building Erected by the City of New York in 1909 for the
Straus Work.



TOMPKINS SQUARE PARK STATION
Northside, Where Pasteurized Milk Is Dispensed by the Glass.

MILK DISPENSED BY THE GLASS.

MILK properly pasteurized is supplied by the glass during the Summer at stations in parks and on recreation piers, at a charge of one cent a glass. In this way healthful food, free from any possible infection, is brought within the reach of children who play in these recreation centres, and the eagerness with which they throng the stations to get this milk is evidence of the need for such institutions. Park Commissioners and others interested in making the parks and recreation piers really beneficial to the children agree that there is no way in which the good done by these play centres can be better supplemented than by this provision for supplying wholesome pasteurized milk at a nominal charge.

In addition to the glass milk the pasteurized modified milk in nursing bottles is also dispensed at these stations. As there is provision for heating the bottles the mothers are not compelled to return home at feeding time, but can spend the day in the open with their children.

But it is not only the children and mothers who are cared for by the dispensing of milk by the glass. These depots are also eagerly sought by growing lads and full grown men, who find in a glass of pasteurized milk better refreshment than is afforded by the corner saloon, and at one-fifth of the cost of a glass of beer, or one-tenth the cost of a drink of spirits. In this way this work has had a decided influence in promoting temperance — not by preaching but by the substitution of a nourishing and wholesome drink for that which dulls the brain and undermines the health.

During the past Summer 1,595,447 glasses of pasteurized milk were served at these stations, and in the twenty-five years of Mr. Straus' work 24,009,498 glasses of pasteurized milk were thus served.

The question is often asked as to what equipment is needed for stations for the sale of milk by the glass. The requirements are:

- Refrigerating tanks, capacity of inner compartment 30 gallons of milk, surrounded by ice chamber.
- Glasses — eight ounce mugs.
- Stirring contrivance, to keep the cream distributed through the milk in the tanks.
- Strainer and cheese cloth to put over top of tanks in pouring milk in.
- Box for extra ice to be used in keeping ice compartment in tanks full.
- Counter for serving the milk.
- Sink for washing glasses, with running hot and cold water.
- Borax solution.
- Trough under tanks to catch drippings.
- Thermometer for testing temperature of milk on delivery to station.
- Dipper for tasting milk on delivery to station.

A STUDY OF EFFORTS MADE IN NEW YORK CITY TO REDUCE INFANT MORTALITY.

BY THE ROCKEFELLER FOUNDATION INTERNATIONAL HEALTH
COMMISSION.

(Extracts from the Report.)

NATHAN STRAUS PASTEURIZED MILK DEPOTS.

In 1892 Nathan Straus established his Pasteurized Milk Laboratory and five depots which operated throughout the year. This was the beginning of organized effort to combat infant mortality by providing absolutely safe milk for artificially fed infants.

The number of year round stations was later increased to eight depots. Ten additional depots were also opened in the summer and have been maintained every year during this season. In addition to the selling of pure milk below cost, free milk was given the needy cases; educational work was carried on through the distribution of literature in various languages; sick infants were treated, mostly in their homes; and advice was given to mothers in infant care, including individual consultations with the doctor who visited the stations.

The paid staff attached to the year-round depots, carrying on definite infant welfare work, included a physician, a supervising nurse—who is a trained nurse—in charge of all the work, eight matrons in charge of the depots, assistants to the matrons, and cleaners at certain of the larger depots. The matrons of each depot had direct charge of the work, including the dispensing of milk and gave such assistance as the physician required on clinic days.

This is a private charity. The expense is borne by Mr. Nathan Straus.

1. Enrollment. Permitted to infants in good health and to sick infants, suffering from non-contagious diseases, which are under two years of age, and live in certain definite districts within whose limits the depots operate. On application, however, anybody in New York City—rich or poor—in need of the special feedings dispensed at these depots may procure the same.

2. Foods. Certified milk, pasteurized according to the Straus method, sold every day in pint and half pint bottles and as modified feedings in individual feeding bottles (of varying sizes) for infants. Needy cases supplied free, after investigation by the supervising nurse.

3. Weekly medical examination by physician at the depots for infants enrolled. Babies weighed and standard modification formulas issued to meet individual needs.

Straus Method of Pasteurization: "The milk is exposed to 157 Fahrenheit for 25 minutes (5 minutes for reaching the temperature and 20 minutes at that temperature), and then rapidly cooled to 40 degrees. This process kills all noxious germs and preserves the nutritious quality."

Cost of Operation: Mr. Straus writes: "I have never made any estimate of the cost of the work. My instructions have been to do the work in the best possible way. The milk has been sold at less than cost and much of it has been given away."

PASTEURIZATION IN THE HOME

*Mr. Straus' Invention of a "Fool
Proof" Home Pasteurizer*

*Award in 1908 by the Exposition
Internationale, Paris*

*Directions for Making the Home
Pasteurizer*



DIPLOMA AWARDED TO NATHAN STRAUS, PARIS, 1908.

PASTEURIZATION AT HOME.

MR. STRAUS felt the need of a pasteurizer for use in the home that would accomplish by simple method the same destruction of bacteria, without impairing the milk, that was effected in the Milk Laboratory.

As the number of people supplied with milk at the Straus Laboratory increased it became evident that there were a large number who would be glad to use the pasteurized modified milk, but were too proud to come to the laboratory to obtain it. In addition, there is, of course, a large class who can well afford to pasteurize at home — those who do not care to share in the charity of buying milk of the laboratory. The apparatus then on the market for this purpose were all of complicated manipulation and most of them heated the milk to a temperature far in excess of that needed to destroy the bacteria.

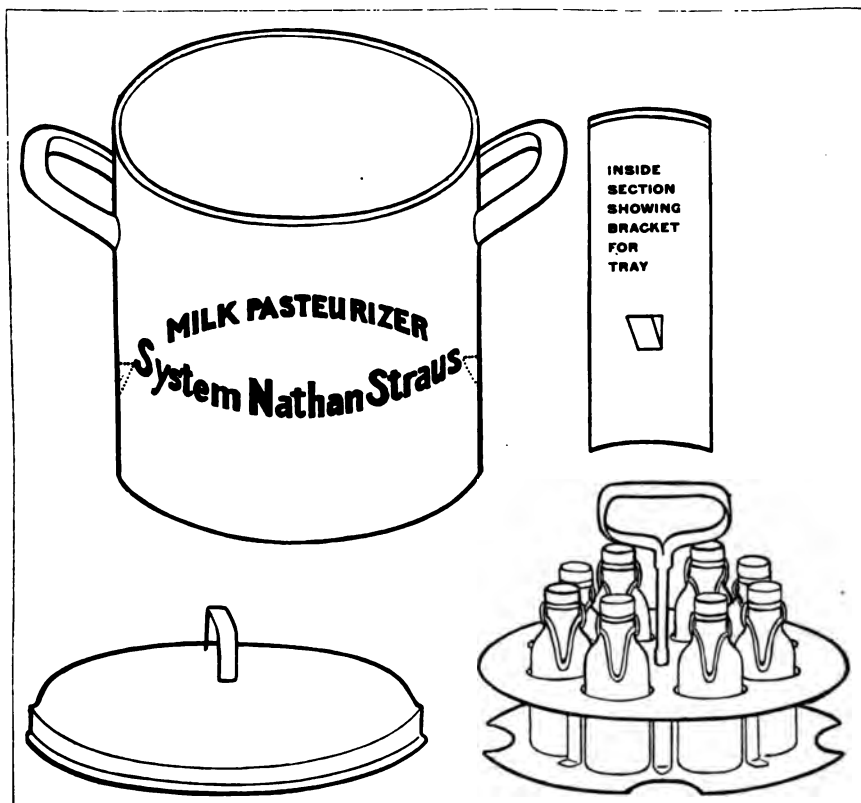


THE NATHAN STRAUS HOME PASTEURIZER.

It was during a prolonged residence in Heidelberg, Baden, Germany, where for some time the pasteurization work was carried on, that experiments were made. They were conducted by inserting a thermometer through the top of the can while pasteurization was going on so that the mercury of the thermometer was in the actual milk in the bottle. The temperature registered on this thermometer was noted every minute for twenty minutes of pasteurization. The proportion of boiling water and cold milk to be pasteurized was exactly determined upon after hundreds of such tests.

Months of experience were needed to develop the Straus Home Pasteurizer to its present high degree of perfection and to make it what is popularly called "FOOL-PROOF."

Directions For Manufacturing Home Pasteurizer-- System Nathan Straus



	SIZE I Eight 3 oz. Bottles	SIZE II Eight 6 oz. Bottles	SIZE III Six 8 oz. Bottles	SIZE IV Six 16 oz. (pint) Bottles
Height of Pan.....	10 $\frac{1}{8}$ in.	10 $\frac{1}{8}$ in.	12 in.	14 $\frac{3}{4}$ in.
Diameter of Pan.....	10 $\frac{1}{8}$ in.	10 $\frac{1}{8}$ in.	10 $\frac{1}{8}$ in.	10 $\frac{1}{8}$ in.
Distance of Top of Bracket from Bottom of Pan.....	3 $\frac{7}{16}$ in.	4 $\frac{5}{8}$ in.	4 $\frac{3}{4}$ in.	6 $\frac{1}{2}$ in.
Amount of Water.....	5 quarts	6 $\frac{3}{4}$ quarts	7 $\frac{1}{4}$ quarts	9 quarts

The Home Pasteurizer consists essentially of three parts, as shown in the illustration. A can (b), a rack (a) to hold the bottles of milk, and a top for the can (c). The bottles are filled to the neck, the patent corks are snapped on and the bottles are placed in the rack.

The pot (b) is placed on a wooden surface (table or floor) and filled to the three supports (in the pot) with boiling water. Then place tray (a), with the filled bottles, in the pot (b) so that the bottom of the tray rests on the three supports. The cover is then placed on the can and the bottles are left in this position for five minutes to heat them thoroughly through. When five minutes have passed the cover is taken off, the rack is given a half turn so that it is no longer supported by the projections on the inside of the can, and it sinks slowly to the bottom of the can. The cover is then replaced on the can. It is advisable to perform this operation as rapidly as possible. The whole is then allowed to stand for twenty-five minutes. The can is then uncovered, the rack lifted out, the hot water is partially emptied out of the can and cold water is poured in its place. When the bottles are cool enough so that they will not be cracked by contact with ice, ice is added to chill them as thoroughly and quickly as possible.

By this process pasteurization is accomplished with a degree of exactness that is almost unbelievable unless one has seen the experiment performed one's self with the thermometer. For the first five minutes that the bottles rest in the water the milk reaches a temperature of 157° F. The milk then remains at exactly this temperature without variation of more than two degrees for the remaining twenty minutes that the bottles remain in the hot water.

The cost of the Nathan Straus Home Pasteurizer is nominal. It can be obtained at any of the stations with bottles and stoppers complete in any size for \$1.50. In fact, any tinsmith can make it by following the directions for manufacturing which are given at the laboratory free of charge (see cut on opposite page).

The utility of the Nathan Straus Home Pasteurizer, because of its absolute simplicity, is very wide. In cases of epidemics, where there is dire need for immediate pasteurization of all the milk in nurseries, hospitals, etc., the Home Pasteurizer steps in as a makeshift until a large pasteurizing plant can be installed. As the whole pasteurization process with the Home Pasteurizer takes about forty minutes, it can easily be seen that sufficient milk for dozens of babies can be pasteurized with one fixture in one day.

In November, 1908, at the General Hygienic Exposition held in Paris, a gold medal and diploma were awarded to Mr. Straus. In announcing the award M. Hurel reviewed Mr. Straus's work in Europe and America in saving the lives of babies, and described in detail the

Home Pasteurizer. He commended the device for its simplicity and its effectiveness in destroying the disease germs in milk, and said:

"This is a real and undoubted service that Mr. Straus is rendering to humanity.

"We, expressing the sentiments of the delegates of the government of the city of Paris, charge their representative to give their warmest congratulations to the philanthropic inventor and decide that a gold medal and diploma be ordered for him.

"May his work extend everywhere, because it has merit and is right."

The Nathan Straus Home Pasteurizer was part of the exhibit made by Mr. Straus at the Sixth International Congress on Tuberculosis, held in Washington, D. C., in September and October, 1908. The Committee on Awards unanimously voted —

*Honorable Mention to the Nathan Straus
Exhibit in recognition of philanthropic effort in
supplying milk to the children of the poor.*

On this occasion Dr. Theobald Smith, the famous Harvard professor, said:

"I am delighted that Mr. Straus has invented a contrivance so simple that any mother can use it and obtain the desired result, namely, the killing of the germs of tuberculosis and other diseases.

"The public should be taught to pasteurize milk in the home, for, even if we had herds free from tuberculosis, there would always be the danger of typhoid and other infectious diseases that may be carried in raw milk."

***T**ABLES compiled from
Official Statistics of the
Department of Health showing—*

*The Infantile Death Rate
of the old City of New York,
now the Boroughs of Man-
hattan and The Bronx, in the
year preceding the opening
of the Nathan Straus Pasteur-
ized Milk Depots, and*

*During the twenty - five
years in which that work has
been systematically directed
to the saving of infant lives.*

Compiled by
WM. H. GUILFOY, M.D.
Registrar of Records,
Department of Health, New York City

**POPULATION, DEATHS AND DEATH RATE OF CHILDREN UNDER FIVE
YEARS OF AGE**

Old City of New York (Present Boroughs of Manhattan and The Bronx)

PER ANNUM

YEAR	POPULATION UNDER 5 YEARS	DEATHS UNDER 5 YEARS	DEATH RATE PER THOUSAND PER ANNUM
1891	188,703	18,224	96.5
1892	194,214	18,684	96.2
1893	199,885	17,865	89.3
1894	205,723	17,558	85.3
1895	212,983	18,221	85.5
1896	217,071	16,807	77.4
1897	221,339	15,395	69.6
1898	225,804	15,591	69.1
1899	230,480	14,391	62.5
1900	235,585	15,648	66.4
1901	240,078	14,809	61.7
1902	244,652	15,017	61.4
1903	249,310	13,741	55.1
1904	254,051	16,136	63.5
1905	258,841	15,287	59.1
1906	263,367	15,534	59.0
1907	268,095	15,645	58.4
1908	273,040	14,909	54.6
1909	278,221	14,940	53.7
1910	283,309	14,674	51.8
1911	290,662	13,769	47.4
1912	298,016	12,819	43.0
1913	305,370	12,442	40.7
1914	312,723	11,691	37.4
1915	320,077	12,017	37.5
1916	327,430	11,149	34.0

FOR THE MONTHS OF JUNE, JULY AND AUGUST ONLY

1891	188,703	5,945	125.1
1892	194,214	6,612	135.2
1893	199,885	5,892	117.0
1894	205,723	5,788	111.7
1895	212,983	6,183	115.2
1896	217,071	5,671	103.7
1897	221,339	5,401	96.9
1898	225,804	5,047	88.7
1899	230,480	4,689	80.7
1900	235,585	4,562	76.9
1901	240,078	4,642	76.8
1902	244,652	4,389	71.2
1903	249,310	4,037	64.3
1904	254,051	4,805	75.1
1905	258,841	4,892	75.0
1906	263,367	4,426	66.7
1907	268,095	5,030	74.5
1908	273,040	4,336	63.0
1909	278,221	4,067	58.0
1910	283,309	4,426	62.0
1911	290,662	3,669	50.1
1912	298,016	3,407	45.4
1913	305,370	3,261	42.4
1914	312,723	2,937	37.3
1915	320,077	3,358	41.6
1916	327,430	3,256	39.5

BABIES LIVES SAVED.

If the infantile death rate of 1892 had continued throughout the succeeding years 597,985 children under five years would have died in the old City of New York (Boroughs of Manhattan and The Bronx) between January 1, 1893, and December 31, 1916. But in these years the total number of deaths was 356,055, which means that 241,930 lives have been saved in these twenty-four years.

The record is given below, year by year, the second column showing the number of deaths that would have been recorded in each year if babies had died at the rate at which they did die in 1892. The larger number each succeeding year is due to the fact that there was an increase each year in the population of children under five years. The third column shows the number of deaths actually recorded in each year, showing usually a decrease in spite of increased population. The fourth column shows the lives saved — that is, the difference between the number that would have died at the 1892 rate and the number that actually did die. The figures, by years, are as follows:

DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE. Old City of New York (Present Boroughs of Manhattan and The Bronx.)

YEAR.	NUMBER THAT WOULD HAVE DIED AT 1892 RATE.	ACTUAL NUMBER OF DEATHS.	LIVES SAVED.
1893	19,229	17,865	1,364
1894	19,790	17,558	2,232
1895	20,486	18,221	2,265
1896	20,882	16,807	4,075
1897	21,293	15,395	5,898
1898	21,722	15,591	6,131
1899	22,172	14,391	7,781
1900	22,663	15,648	7,015
1901	23,095	14,809	8,286
1902	23,535	15,017	8,518
1903	23,984	13,741	10,243
1904	24,440	16,136	8,304
1905	24,901	15,287	9,614
1906	25,336	15,534	9,802
1907	25,791	15,645	10,146
1908	26,266	14,909	11,357
1909	26,765	14,940	11,825
1910	27,254	14,674	12,580
1911	27,962	13,769	14,193
1912	28,669	12,819	15,850
1913	29,376	12,442	16,934
1914	30,084	11,691	18,393
1915	30,791	12,017	18,774
1916	31,499	11,149	20,350
Total	597,985	356,055	241,930

The death rate in 1892 was 96.2 per thousand per annum. The rate in 1916 was 34.0. The summer mortality of children under five years has been reduced from 135.2 per 1000 per annum to 39.5.

COMMENTS ON MR. STRAUS' WORK.

"I cannot explain by what manner of almost prophetic insight Mr. Straus for so many years has advocated a remedy which is now receiving the approval of authorities who have arrived at the same conclusions by different and slower routes."

— Dr. Charles E. North, in 1910.

"The increasing resort to pasteurization of milk supplies is destined to limit very much the possibility of milk infection. It is the aim and the hope of the State Department of Health to bring about the universal pasteurization of milk in all the larger municipalities of the State within a reasonable period of time. This will result in the protection of children from this source of infection."

— Dr. Hermann M. Biggs, Comr. Health, N. Y. State, Nov. 4, 1915.

"If one could look for the first time into the quiet features of Nathan Straus with no knowledge of the identity of the man or of his work, it would be hard to believe that behind the calm of his face lay the structure of such a giant purpose as is embraced in the words, the saving of human life, not alone in New York, not alone in America, but the whole world over."

— Percy M. Cushing, in "The New York Press."

"In New York and a number of other American cities the pioneer philanthropic work of Nathan Straus has made possible the establishment of milk depots from which pasteurized milk has been distributed. The establishment of such milk depots has been followed in every instance known to me by a noteworthy reduction in infant mortality."

— Professor Edwin O. Jordan, University of Chicago, 1912.

"Are we in league with death that we have spent a thousand millions of increase in expenditure for war purposes in the last few years and rely on Nathan Straus to abate the killing of babies with infected milk in New York and in Washington?"

— Robert L. Owen, in The Twentieth Century Magazine

A PRACTICAL DEMONSTRATION.

An interesting experiment was conducted in Washington, D. C., between April 24, 1911, and October 17, 1913, to determine whether babies thrived better on raw milk or on pasteurized milk. The raw milk used was not the ordinary market milk, but was the best and cleanest that could be had. The 351 babies fed on this exceptionally good raw milk showed an average gain per baby per day of .4030 ounces, while the 557 babies fed on pasteurized milk showed an average gain per baby per day of .4077 ounces — an average difference of .0047 ounces per baby per day in favor of pasteurized milk. Both raw and pasteurized milk were fed to 110 babies, at different periods. The average net gain per baby per day on raw milk was .4312 ounces, while the average net gain of the same babies per baby per day when fed on pasteurized milk was .4607 ounces — an average difference of .0295 ounces in favor of pasteurized milk.

INFANT MORTALITY RATE ZERO.

Dr. S. G. Moore, Medical Officer of Health at Huddersfield, England, discovered a village in the south of France, Villiers-le-Duc, in which the infant mortality rate had been zero for ten years, not one child under one year of age dying during the period from 1893 to 1903. The measures by which such an ideal condition was obtained included municipal provisions for the care of mothers and babies, pasteurization of milk and a cash payment to each mother who can show a healthy baby one year old.

M I L K W O R K
on
T W O C O N T I N E N T S

*Congrès des Gouttes de Lait
Heidelberg and Sandhausen
Dublin and London
Karlsruhe and Eberswalde
Berlin and Vienna
Exhibits with Model Plant
Washington
Typhoid Epidemic at Cassel
Tuberculosis Congress
California
Philadelphia
Butter, Ice Cream and Cheese
Infantile Paralysis*



NATHAN STRAUS LABORATORY, WASHINGTON, D. C.
View of Interior.



MAIN NATHAN STRAUS STATION, WASHINGTON, D. C.
At Laboratory, 1319 H Street, N. W.

MILK WORK ON TWO CONTINENTS.

WHEN convinced by practical experience that pasteurization of milk meant prevention of diseases, Mr. Straus diligently promulgated the results of his demonstrations in papers and letters, the most important of which are reprinted in the latter part of this volume.

The year following his first magazine article in "The Forum" (see page 179) Mr. Straus, on June 8, 1895, wrote an open letter to the Mayors of the American cities (see page 185); on March 22, 1897, he addressed the Presidents of Health Boards of American and Canadian cities (see page 187), and on September 29, 1897, before the National Conference of Mayors and Councilmen at Columbus, Ohio, he submitted a paper on "The Influence of a Pure Milk Supply on the Death Rate of Children" (see page 195). In July, 1905, he presented a paper on "Infants' Milk Depots" (see page 203) before the British Medical Association at Leicester, England.

In 1905 he presented a paper to the first Congress of the "Gouttes de Lait" at Paris, urging that "It is milk — raw milk, diseased milk — which is responsible for the largest percentage of sickness in the world." He met with little support. But on October 20, 1906, "The Lancet," the foremost British medical journal, in a leading editorial, indorsed Mr. Straus' work, and in December, 1906, Mr. John Burns, President of the Local Government Board, urged the British Parliament to legalize the establishment of pasteurized milk depots by municipalities.

In March, 1907, Mr. Straus presented a pasteurization plant to Princeton University.

In a brochure, "Striking at the Cause of Tuberculosis" (page 207), in October, 1906, and before the American Anti-Tuberculosis League, on June 4, 1907, in a paper on "Raw Milk" (page 219), Mr. Straus dealt directly with unpasteurized milk as a cause of tuberculosis. He prepared a statement, "The Best Prescription" (see page 227) for the Committee of One Hundred for Federal Regulation of Public Health, and wrote an article, "Milk Inspection — Why It Fails" (see page 228).

In September, 1907, Mr. Straus attended the Second International Congress of the Gouttes de Lait at Brussels, Belgium, presenting a paper on "The American Solution of the Milk Problem" (see page 221), and the congress declared "That milk for children should be boiled, sterilized, or pasteurized — never used in the raw state." This resolution was adopted after a heated discussion in which Dr. S. G. Moore, medical officer of Health of Huddersfield, England, was Mr. Straus' only supporter.

On October 16, 1907, the International Medical Association advised the boiling of milk.

HEIDELBERG AND SANDHAUSEN.

Finding milk conditions even worse abroad than in this country, Mr. Straus devoted himself to the task of overcoming the prejudice that deprived babies of the chance to escape sickness. He set up a laboratory for the pasteurization of milk in Heidelberg, Germany, in 1907, and maintained it for a year, supplying pasteurized milk for the Children's Hospital at the University and for several charitable institutions.

In Sandhausen, a village of 4,000 inhabitants, in the district of Heidelberg, Mr. Straus found the death rate among children 46 per hundred per annum. He set up a pasteurization plant there on February 1, 1908, and in order to make a test he supplied *all* the children under two years with pasteurized milk free of charge — using the same milk supply



VIEW OF SANDHAUSEN MILK KITCHEN

as before, only pasteurizing it. The result was that the death rate among children under two years, which for five years had averaged 46 per cent., was cut down to less than 20 per cent. Prior to the introduction of pasteurization, there were usually 6 to 7 deaths every July. In August, 1910, Mr. Straus received this cablegram:

Sandhausen, August 5, 1910.

We are very fortunate to be able to inform you that in the month of July of this year not a single death has occurred in infants under two years of age, due to the great success of the milk kitchen which you have founded.

HAMBRECHT, Mayor.

When Mr. Straus visited Sandhausen subsequently 250 mothers brought their children to prove the benefits of pasteurization. When a vote of thanks was proposed, they held their babies aloft.

In 1908 he gave a plant to Dublin, which has been maintained by the Women's National Health Association, under the patronage of the Countess of Aberdeen, wife of the Viceroy, with the result that the death rate among the babies supplied with pasteurized milk has been only 55 per thousand, while the mortality among the rest of the babies of Dublin has been three times as great.

KARLSRUHE AND EBERSWALDE.

In the same year the Women's Society for the Care of Infants, under the patronage of the Dowager Grand Duchess Luise of Baden, accepted a pasteurization plant for Karlsruhe. In this city the death rate among babies had been from 26 to 27 per cent. About one-fifth of the babies in the city were supplied with pasteurized milk, which reduced the death rate among the babies under the care of the society to 6.3 per cent., while in the entire city the death rate among the babies was reduced to 17 per cent.

In recognition of his work at Heidelberg, Sandhausen and Karlsruhe a gold medal was presented to Mr. Straus by the Grand Duchess of Baden.

Remarkable results were obtained near Berlin, at Eberswalde, which was also supplied with a Pasteurization Plant, presented to Frau Roemer, President of the Vaterlaendische Frauen Verein. During the excessively hot Summer of 1911 there were only two deaths in this town among the babies supplied with pasteurized milk, while in Berlin proper the death rate for the same months was double the average of previous Summers.

In the spring of 1908 exhibitions were given with a model plant at Frankfurt-on-Main, Berlin, Vienna and London. The following year Dr. Henry Richard Kenwood, professor of Hygiene and Public Health at the University Medical College, London, strongly indorsed pasteurization before the British Medical Association.

While in Heidelberg Mr. Straus on July 24, 1908, delivered a lecture on "Milk Pasteurization an Economic and Social Duty" (see page 229) before the students of political economy in the University of Heidelberg, and under the title "America's Latest Contribution to the Milk Question" (see page 241) he reviewed the report of the milk investigation conducted by experts of the United States Government and published under the title "Milk and Its Relation to Public Health."

During his residence at Heidelberg Mr. Straus perfected a "fool-proof" device for pasteurization of milk in the home. He refused to patent it and gave permission to any tinsmith to make such pasteurizers from plans which he freely supplied (see pages 83-88).



EXHIBITION MADE WITH MODEL PLANT.
At the VIth International Tuberculosis Congress at Washington,
October, 1908.



ENLARGED VIEW OF PASTEURIZER AND BOTTLE FILLER.

DEMONSTRATIONS WITH MODEL PLANT.

The Model Pasteurization Plant was in full operation at the Exhibition given in Washington in September and October, 1908, in connection with the Sixth International Congress against Tuberculosis, and received honorable mention. This plant was also shown in actual operation at the Tuberculosis Exhibition in the American Museum of Natural History, New York City, in December, 1908, and at the Philadelphia Tuberculosis Exhibition in February, 1909.

Exhibits were also made at the Child Welfare Exhibition, at the 71st Regiment Armory, New York City, in January, 1911; at the annual meeting of the American Association for the Study and Prevention of Infant Mortality, in Baltimore, November, 1910, and at New Haven, Conn., in January, 1914, under the auspices of the Chamber of Commerce. (Views of the Model Plant are shown on the opposite page.)

Surgeon General Walter Wyman, of the Public Health Service, after a careful study of the exhibit at Washington, declared:

"This is the real focus of the exhibition. This plant tells how to prevent the disease by robbing the milk of the power to transmit tuberculosis from the cow to the human being. Pasteurization makes possible the elimination of the disease just as smallpox and yellow fever have been eliminated from civilized communities."

At the Philadelphia Exhibition, Mr. Straus made a statement on "Why We Still Have Tuberculosis" (see page 252).

On the closing of this Exhibit Rev. Dr. Joseph Krauskopf issued a brochure on the Great White Plague, urging that municipalities should adopt the Straus method of rooting out tuberculosis. He added:

"Considering the lives he has saved and is saving, I know of none more deserving of the Nobel prize of Sweden than Nathan Straus. Considering that monuments are raised to those who, upon the battlefield, rout an enemy, or save an army, what monument could adequately speak of a nation's appreciation of one who annually beats back the onslaughts of one of the fiercest foes of mankind, in districts in which his deadly sway has been unopposed before the advent of Nathan Straus.

"But Mr. Straus does not care for honors; he has not labored for them. He has but one ambition, to see the little innocents rescued from the hand of a deadly yet conquerable enemy. Having seen a child of his own sacrificed to that Moloch, having personally experienced the pangs of loss, he wants to see that pang spared to others, as far as lies in human power, especially to those who cannot help themselves.

"Having demonstrated that tuberculosis can be controlled, even conquered, he wants to see the municipality, the state and the nation do what, for obvious reasons, cannot be done by an individual. He has expended a fortune on his philanthropy, and is willing to expend more, but the problem is too vast for him to cope with alone."

Mr. Straus was greatly encouraged by the declaration of the Washington Congress that "Measures are to be continued against bovine tuberculosis, and its transmission to man is to be recognized." That such a declaration was obtained in the presence of Professor Robert Koch, and in the face of his opposition, was due chiefly to Dr. Ravenel, Dr. Magruder and Dr. Schroeder, the American investigators. Mr.

Straus expressed his satisfaction in a letter to Dr. Magruder (see page 249).

He used the term "The White Peril," in 1908, as descriptive of raw milk, in an article written for "The Delineator" (see page 277) and published the following August.

In an open letter on May 1, 1909, to the clergy on "Mothers' Day" (see page 258), Mr. Straus pointed out the burden put upon mothers by the needless slaying of babies. He wrote in June, 1909, on "Woman's Influence" (see page 265) to the International Council of Women.

In this year Mr. Straus was consulted by Mr. J. Ross Robertson, of Toronto, who introduced pasteurization in the Children's Hospital in that city. The Ontario Government Milk Commission (see page 48) made a thorough study of Mr. Straus' work, and in 1910 reported in favor of pasteurization. Assistance was also given in the establishment of pasteurization plants in Wilkes-Barre, Pa., and Jersey City.

PAPERS BEFORE VARIOUS CONGRESSES.

In 1909, in an open letter to the National Association for the Study and Prevention of Tuberculosis, Washington, D. C. (see page 259), Mr. Straus proved that the vigorous campaign against tuberculosis had failed to check the Great White Plague, giving as the reason the neglect of precautions against tuberculous milk; in 1910 the association warned against such milk, and in 1911, under the presidency of Dr. Ravenel, definitely "recommended the efficient pasteurization of milk as a safeguard against the transmission of bovine tuberculosis to mankind."

In May, 1909, Mr. Straus presented a paper on "The Necessity for the Pasteurization of Milk and the Benefits Attained Thereby" to the International Congress of Applied Chemistry at London (see page 263). The following month, at Budapest, before the International Dairy Congress, he presented a paper on "The Extinction of Cows and Men" (page 262). In July, 1909, at Stockholm, he submitted a report to the Seventh International Conference on Tuberculosis on "The Infection of Children by Milk from Tuberculous Cows" (see page 267) and a paper on "Progress in America in the Fight Against Tuberculosis" (see page 271).

On August 31, 1909, Mr. Straus presented to the International Medical Congress at Budapest a paper on "Prevention of Infectious Diseases Caused by Milk" (see page 273), and at a later session of the same Congress he submitted detailed figures to prove that tuberculosis, instead of being conquered, was on the increase, owing, he charged, to the neglect of prevention against tuberculous milk. The same month he submitted a statement on "Tuberculous Milk" (page 272) to the Association of State and National Dairy and Food Departments in session at Denver.

On October 22, 1909, Mr. Straus made a report to the American Public Health Association, in session at Richmond, Va., on "A Typhoid Epidemic in New York City Due to Raw Milk" (see page 285).

STOPPING TYPHOID IN CASSEL.

In September, 1909, Mr. Straus helped to check the typhoid epidemic at Cassel, Germany. The epidemic began in a Home for Babies, but the victims were the nurses, not the children. The nurses used raw milk; the babies the same milk, scalded. The disease was traced to a sanitary dairy run under strict superficial supervision. This dairy was forbidden to continue the distribution of milk. Mr. Straus shipped 200 Home Pasteurizers to the town and by their use no new cases developed and the epidemic was gradually stopped.

Mayor Höpfner, of Cassel, wrote as follows:

Cassel, August 5, 1910.

The apparatus for milk pasteurization which you so nobly donated to the city of Cassel on the occasion of the typhoid epidemic last summer have been divided up between several charitable institutions and have proven eminently satisfactory.

The president of the Milk Kitchen, Health Counsellor Dr. Willich, for example, writes to us as follows:

"I wish to testify that the milk pasteurization fixtures which we are using for our nursery have given great satisfaction—also in numerous private families to whom I loaned the fixtures. The great advantage of simplicity and quick action makes them favorites among the people and also among the employees of the Nursery and Milk Kitchen. The success attained in the feeding with milk prepared in these fixtures is, according to my experience, in every instance very good."

We herewith give repeated expression of our sincerest thanks for your donation, which will certainly prove a most blessed one for the feeding of infants, and we would be glad to have the opportunity to show you our charitable institutions.

Most respectfully yours,

HOPFNER, Mayor.

On Jan. 31, 1910, in the National Monthly, Norman E. Mack wrote:

"While Napoleon slew his tens of thousands, it is no exaggeration to say that Nathan Straus has saved the lives of hundreds of thousands of babies. Indeed, one authority upon public health questions recently estimated that the wide extension of the pasteurization of milk, the establishment of infant milk depots, and the promotion of home pasteurization, all due to the pioneer work and the diligent campaigns of education conducted by Mr. Straus, had resulted in the saving of six million babies who would have died under the conditions of infant feeding that prevailed before Mr. Straus began his work in 1892. That his work will go on and save other millions is assured by the tremendous impetus given pasteurization by Mr. Straus's indefatigable efforts."

On March 7, 1910, Mr. Straus expressed his convictions as to "The Strategic Point of Attack" (see page 286) in a letter to the Health Commissioner of the State of New York, and the same year wrote on "The Crime of Tuberculosis" in "The Reform Advocate" (see page 287).



NATHAN STRAUS LABORATORY, WASHINGTON, D. C.
Cream Separator and Bottle Filling Machine.



NATHAN STRAUS LABORATORY AT WASHINGTON, D. C.
Pasteurizing Oven.

In September, 1910, Mr. Straus presented a paper on "Saving Children from Milk-Borne Diseases" (see page 291) at the 38th Annual Meeting of the American Public Health Association at Milwaukee, Wis.

"Woman's Sphere" (see page 290) was the title of a brief article in "Good Housekeeping." He encouraged the formation of a "League to Fight Unnecessary Diseases" (see page 292) in a letter to Prof. J. Pease Norton, and he wrote a statement on "Municipal Government and the Milk Supply" (see page 293) for the Council of One Hundred.

LABORATORY IN WASHINGTON.

In Washington Mr. Straus erected a plant in 1910 and maintained it for two years. (See illustrations on page 94 and opposite page.) The death rate per annum among the babies fed on this milk was 6.2 per cent. and none of these were lost from intestinal disorders or infectious diseases. The Washington plant was afterwards donated and shipped to the Gota de Leche (Gouttes de Lait) Society in Manila, Philippine Islands, at the request of the War Department, Bureau of Insular Affairs, Washington, D. C.

On the occasion of the formal opening of the Washington Laboratory on May 11, 1910, the Hon. Jacob H. Gallinger, Senator from New Hampshire, presided. Addresses were made by Dr. Walter Wyman, Surgeon-General, Public Health Service; Dr. A. D. Melvin, Chief of the Bureau of Animal Industry; the Hon. John A. Johnston, one of the Commissioners, and Dr. W. C. Woodward, Health Officer of the District of Columbia; Dr. J. H. M. Knox, Jr., president of the National Association for the Study and Prevention of Infant Mortality, and Dr. Arthur Randolph Green, Medical Director of the Nathan Straus work.

At this meeting the following statement was made by Dr. M. J. Rosenau, Professor of Hygiene and Preventive Medicine at Harvard Medical School:

"Pasteurization is rapidly gaining ground. Raw milk is apt to be dangerous milk. The milk that is not certified or guaranteed as fresh, pure and clean should be heated to at least 140 degrees Fahrenheit for twenty minutes. This in essence constitutes pasteurization, and is the inevitable outcome of the future. The dangers from raw milk are constantly brought to our notice through epidemics of typhoid fever, scarlet fever, diphtheria and the summer complaints of children. All these and many more infections are carried in milk.

"The safeguard is to destroy the infection by the simple process of heating the milk to the proper degree of temperature for a sufficient time.

"Pasteurization does not injure the quality of the milk in any way, does not diminish its nutritive value. It saves lives and prevents sickness. This great merit more than offsets the minor objections to the process.

"Mr. Straus was the first to recognize the value of pasteurized milk, and his work is one of the bright chapters in the history of American philanthropy and sanitation. The extension of his good work to Washington has more than a national significance, and should have a widespread influence in the field of preventive medicine through the conquering of milk-borne diseases."

THE WHITE HOUSE
WASHINGTON

July 27, 1911

My dear Mr. Straus:

I have your letter of July 25th, and am glad that you find it possible to accept appointment as the official delegate on the part of the United States to the Third International Congress for the Protection of Infants and the Seventh International Congress against Tuberculosis.

I appreciate your kind expressions concerning my Administration, and thank you warmly.

Sincerely yours,



Nathan Straus, Esquire,
27 West 72nd Street,
New York City.

*I am glad to have the opportunity
of appointing one who has shown
himself by his previous work so
interested and so capable, and
so successful in time and money in the great reform of hygiene.*

OFFICIAL DELEGATE TO BERLIN CONGRESS.

In 1911 President Taft appointed Mr. Straus sole official delegate to the Third International Congress for the Protection of Infants, which was the new title of the Gouttes de Lait, adopted at the Brussels meeting at Mr. Straus' suggestion. At this Congress, which met in Berlin in September, Mr. Straus presented an official report on "Progress Made in America in the Protection of Child Life" (see page 301), and a paper on "Twenty Years' Practical Experience in Modifying and Pasteurizing Milk for Infant Feeding" (see page 307). Mr. Straus made a report on the work of this Congress to President Taft (see page 311).

In this Congress Mr. Straus was bitterly opposed by two American physicians. Writing of this incident, Dr. Moore said:

"Even before I started for Berlin a representative of the Russell Sage Foundation made an attack on Mr. Straus, not being at the time aware of the very high esteem in which I hold him. At the congress, Dr. _____ and Dr. _____ both approached me and decried the work of Mr. Straus. I gave each of these individuals full opportunity of saying all that they had to say, and when I found that this amounted to nothing beyond vague suggestions and insinuations, I, in each case, put it to them bluntly to speak out and say anything they had to say. All that it amounted to was that Mr. Straus was obtaining more credit for his work than was his due and that in consequence the work of medical men was not receiving due recognition.

"Speaking as a medical man I say that it is a source of regret and of shame to me that trained and educated human beings should so utterly miss the point. What matters it who gets the credit so that the lives of infants are saved, and how utterly shameful it is that men's minds should be occupied by such thoughts, while the children die needlessly."

In acknowledging Mr. Straus' acceptance of this mission and of his appointment as a delegate to the Tuberculosis Congress, the President wrote appreciatively of Mr. Straus' work. (See opposite page.)

As he was sailing from New York to attend the Berlin Congress a messenger from the State Department delivered to Mr. Straus a letter of instructions in which the Secretary of State made formal recognition of Mr. Straus' pioneer work and recorded the indorsement of his methods by the United States Government. (See next page.)

Before the National Congress of Mothers, in session in Washington, D. C., May 2, 1911, Mr. Straus presented a paper on "Prevention of Infantile Mortality" (page 298). In December of the same year, in a letter to the American Public Health Association, in session at Havana, Cuba, he paid tribute to the late Surgeon General Wyman. (Page 310.)

In 1911 Mr. Straus served with Prof. Alphonse A. Thibaudeau, of the University of Buffalo, and Edward C. S. Taliaferro, of Norfolk, on a special committee of the American Public Health Association on the Conservation of Child Life.

On Jan. 22, 1912, at the Milk Conference in New York, Mr. Straus submitted a paper on "No Safety Without Pasteurization" (page 314).

Department of State.
Washington, August 17, 1911.

Nathan Straus, New York:

Sir — Referring to this department's letter of the 20th ultimo, inclosing the certificate of your designation as a delegate on the part of the United States to the Third International Congress for the Protection of Infants, to be held at Berlin, in September, I desire to inform you that you were selected for this service because of the facts that you were a pioneer in the establishment of infants' milk depots in this country, having used your time, means and influence, without stint for the past twenty years, both in the United States and abroad, to promote the proper feeding of babies and to protect them from tuberculosis and other infectious diseases; and that the methods which you have practiced and advocated have been indorsed by the Public Health Service after a thorough investigation by a corps of twenty experts under Surgeon-General Wyman.

It is desired to have you communicate to the congress the results reached by the experts of the Public Health Service and of the Department of Agriculture and apprise the delegates of the other nations of the measures undertaken in this country to protect life and to commend these methods to their people.

It is further desired that you report to the department the results of the congress, especially with a view to giving the country the benefit of the assembled experience of the delegates of the various countries.

I am, sir, your obedient servant,

P. C. KNOX, Secretary.

OFFICIAL DELEGATE TO TUBERCULOSIS CONGRESS.

In April, 1912, as official delegate from America to the Seventh International Congress Against Tuberculosis, at Rome, Mr. Straus submitted a report on "Progress Made in America in the Prevention of Tuberculosis" (see page 315), and at the Fifteenth International Congress on Hygiene and Demography at Washington in September, 1912, he presented a paper on "The Function of Voluntary Organizations in the Campaign for the Betterment of Milk Production and Distribution" (see page 325). At this Congress he was an official delegate from the State of New York and from the American Public Health Association, and served on the Committee on Organization.

BEFORE THE CALIFORNIA LEGISLATURE.

In March, 1914, Mr. Straus appeared before the California Legislature, on invitation, and made an address on "Give the Baby a Fair Chance to Live" (see page 333). He secured the adoption of a pasteurization law which went into effect October 1, 1916.

In 1914 Mr. Straus was a member of the Commission appointed by Governor Glynn to study milk conditions in New York State. The same year he cooperated with the Hon. Waldorf Astor in a movement to secure the improvement of the milk supplies in England, and was to have appeared before the British Parliament in advocacy of pasteurization, but the European war interfered.

In a letter to Governor Baldwin, of Connecticut, on January 31, 1914 (see page 332), Mr. Straus urged that prevention of disease be taught in the schools.

On April 23, 1914, Mr. Straus presented a paper on "The Foundation of the Child Welfare Movement" (see page 337) at the Third International Congress on the Welfare of the Child, at Washington, and he prepared a paper on "Knowledge that Protects the Family from Its Chief Foe" (page 339), for the Home Education Congress, to be held in Philadelphia in September, but which was abandoned on account of the war.

DISEASE PREVENTION DAY.

Mr. Straus warmly indorsed the plan of Governor Ralston, of Indiana, and Health Commissioner Hurty for a "Disease Prevention Day," and in a letter to each of the Governors of the American States (see page 338) he urged the adoption of this idea.

"Confidence in the Abolition of Tuberculosis" (see page 336) was the title of a letter Mr. Straus wrote on June 4, 1914. He wrote the same year on "Proved Methods of Prevention" (see page 343), on "Certification of Tuberculous Milk" (see page 344), and on "The National Health Guard" (see page 349).

In December, 1914, at the meeting of the American Public Health Association in Jacksonville, Fla., Mr. Straus discussed "The Relation of the City to the Milk Supply" (see page 345).

In these latter years Mr. Straus was much consulted by health officers and others, and his influence was sought to induce local authorities to adopt pasteurization. In this way he rendered assistance particularly in Philadelphia, Milwaukee, Cleveland and San Francisco.

In Philadelphia, the milk dealers combined to secure an injunction invalidating the pasteurization ordinance. Mr. Straus was asked to appear as a witness in the court, and with Dr. Park, of the New York County Medical Society, and with the Medical Director of his Laboratory, succeeded in having the ordinance sustained.



THE COURTS SUSTAIN THE PASTEURIZATION ORDER.

(Reproduced from the Philadelphia North American.)

CREAM, BUTTER, ICE CREAM AND CHEESE.

All that has been said for pasteurization applies with equal force to cream, butter, ice cream and cheese. Mr. Emile Berliner, of Washington, D. C., to whom the world owes much, both for his inventions and for his lifelong fight against disease in milk, in October, 1909, wrote:

"The lesson confirmed by the researches of Schroeder and Cotton regarding the transmission of tubercle bacilli through milk, cream and butter is very plain. All milk or cream offered for sale or used for the making of butter, ice cream and cheese should be properly pasteurized. And those who deliberately oppose this simple, harmless and most efficient precautionary measure should henceforth be classed as belonging to the enemies of human society."

Mr. Berliner, as chairman of the Committee on Publications of the Washington Association for the Prevention of Tuberculosis, in 1912 framed twelve "Health Rules," in which this is included:

IV SAFE MILK AND CREAM

Tuberculosis, typhoid fever, and other diseases are often caused by drinking raw milk and raw cream.

Get milk properly pasteurized, or home pasteurize it, or simply scald it.

All cream, including that used for ice-cream and butter, should be properly pasteurized to be safe.

Cream from tuberculous milk has tubercle bacilli in larger numbers than the milk itself, the U. S. Bureau of Animal Industry having demonstrated the tendency of tubercle bacilli to rise with the cream. The Agricultural Department in 1907 reported that —

The examination of sediment taken from cream separators of public creameries throughout the country has demonstrated the presence of tubercle bacilli in about one-fourth of the samples.

There is nothing in the processes of making butter, cheese or ice cream to impair the vitality of disease germs. Cold does not kill them; only by heat (pasteurization) can they be destroyed. The ripening process, in the making of butter and cheese, tends to multiply the germs.

Dr. E. C. Schroeder found tubercle bacilli alive in butter 133 days old and in a sufficient state of vitality to cause rapidly fatal tuberculosis in guinea pigs.

Dr. Harvey W. Wiley, examining 263 samples of ice cream in Washington, found an average of 26,612,371 bacteria to the cubic centimeter. He said: "Thorough pasteurization under competent supervision is highly desirable." The Milk Committee found that the bacteria in ice

cream in New York City numbered as many as 21,000,000 to the cubic centimeter.

In April, 1914, thirty cases of typhoid fever in Newburgh, N. Y., were traced to ice cream. The factory was shut down and this ended the epidemic.

Professor F. C. Harrison found tubercle bacilli alive in cheese 104 days old.

Dr. Schroeder, in the Federal investigation of the milk problem, wrote:

"We have seen that tubercle bacilli in milk are transferred to the cream, butter and cheese made from it, and may occur in these products in greater concentration than they had in the milk from which they were derived.

"We have seen that no better medium for the preservation of the life and virulence of tubercle bacilli can be found than the moist, bland and opaque character of butter offers."

On April 14, 1914, the National Commission on Milk Standards, decided that milk and cream used in the making of ice cream and butter should be pasteurized.

The U. S. Bureau of Animal Industry in April, 1910, reported:

"The testing of infected butter has been continued, and in the later experiments of this nature the conclusions reached through former work have been confirmed. Tubercle bacilli will retain their vitality and virulence while in butter under common market conditions for at least five months.

"The vitality of the typhoid bacillus has been investigated both in butter and milk. On the 151st day after the manufacture of butter from milk infected with typhoid bacilli living colonies of these bacilli developed on plates that were made from the butter. This proves that typhoid bacilli will retain their vitality under these conditions for one hundred and fifty-one days, and that during this period of time these micro-organisms are ready to multiply whenever placed in suitable environment."

Dr. Alfred F. Hess, the well known children's specialist of New York, says:

"It has been demonstrated by Bruck that typhoid bacilli can maintain their viability and virulence in butter for at least 29 days, and, indeed, multiply in this medium for the first few days."

"It should be borne in mind that very young children, two years of age or younger, at a time when they are still very susceptible to infection by the bovine bacillus, consume considerable quantities of butter and are thus exposed to infection."

SEPTIC SORE THROAT.

On October 9, 1914, commenting upon an epidemic of septic sore throat at Rockville Centre, Long Island, the U. S. Public Health Service said:

"During the last few years epidemics of septic sore throat of considerable size, and spread through the agency of milk, have occurred in a number of American cities. Several of the larger of these outbreaks have been reported in the medical press.

"The occurrence of such outbreaks could be avoided if pasteurized milk only was used. However, owing to the prejudice of many people against pasteurized milk, this method of preventing the spread by milk of septic sore throat and of other diseases—among which are typhoid fever, scarlet fever, and diphtheria—is not practicable in all instances. The time may come when pasteurized milk only will be used, and then there will be no more epidemics of these diseases spread by milk."

INFANTILE PARALYSIS.

BY LEOPOLD STIEGLITZ, M.D.

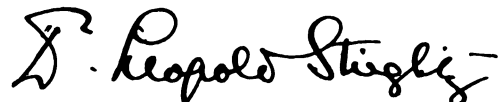
THE means by which the poison of infantile spinal paralysis is spread among its thousands of little victims is still a mystery to science. As long as that is the case any observation or fact throwing possible light on the matter is of great value.

The well verified fact, that not a single authenticated case of poliomyelitis developed among the 2,000 babies fed by the Straus Milk Laboratory during the recent severe epidemic — although many of the babies lived in the very hotbeds of the epidemic — is to my mind of the utmost significance. The mere fact that a large majority of the cases occurred in babies at the age (1 and 2 years) during which milk is the chief article of food must in itself arrest attention and throw suspicion upon contaminated milk as a possible conveyer of the poison.

This suspicion is strengthened by the well established observation, that in most of the cases of infantile paralysis intestinal disturbances constitute the first symptoms of the dread disease. But whether the intestinal tract is the actual port of entrance, as some scientists seem to believe, or whether Rosenow's claim that the poison is harbored in the tonsils and enters the system through them is verified in the course of time — in either case contaminated milk might well be one of the more important means, by which the disease is spread, for we all know, that not only intestinal infections (typhoid par excellence), but also throat infections, such as scarlet fever, diphtheria and tonsilitis are frequently transmitted by infected milk.

These considerations demonstrate the wisdom of the warning spread broadcast during the recent epidemic by Mr. Straus, against the use of raw milk. Contaminated and unpasteurized milk has so often been shown to be the guilty medium by which disease is spread among the little ones, that it would not be surprising, if once more Nathan Straus had blazed the way for saving these priceless little lives.

Very sincerely yours,

A handwritten signature in dark ink, reading "Dr. Leopold Stieglitz". The signature is written in a cursive, flowing style with a long horizontal line extending from the end.

MR. STRAUS' WARNING IN 1910.

IN September, 1910, Mr. Straus, in a paper before the American Public Health Association, on "Saving Children from Milk-Borne Diseases" (see page 291), said:

"We ought to recognize that the disease now attracting so much attention—infantile paralysis—has all the appearance of a germ disease, occurs among infants whose only food is milk, and is probably prevented by pasteurization. I venture this presumption because of the fact that this disease has never occurred among the babies fed upon the milk pasteurized at my laboratories. I submit this fact in the hope that this practical experience may be used to the protection of child life while scientists are engaged in the tedious effort to isolate the germ.

"If resort to pasteurization precedes scientific justification in the case of infantile paralysis, this method, as applied to the diseases known to be milk-borne, follows and confirms the discoveries of science."

THE EPIDEMIC OF 1916.

In the summer of 1916, when infantile paralysis scourged New York City, thousands of parents, in terror lest their babies should fall victims to the disease, wrote to Mr. Straus asking his advice. On July 12, 1916, he published the following card:

Inquiries about Pasteurization of Milk have reached me up to one thousand since yesterday.

I am answering these as fast as possible, and I am sending minute directions how to pasteurize at home.

Until these answers can be received my advice is—where properly pasteurized milk cannot be procured—boil all milk, for adults as well as for children. It is important to cool it rapidly, and keep in an airtight vessel.

NATHAN STRAUS.

On August 5, while in the Catskills, the following dispatch in "The New York Times" attracted Mr. Straus' attention:

SAYS MILK CARRIES DISEASE.

Health Supervisor Finds Six Cases on One Dairy Route.

TROY, N. Y., Aug. 4.—In announcing tonight another death from infantile paralysis at Saratoga Springs, Health Supervisor Prest of the Northern New York District said that investigation had proved that, beyond a doubt, the disease was being carried in milk.

Of six cases and three deaths, all were in the same, milk route.

Mr. Straus at once telegraphed to the superintendent of his Laboratories in New York inquiring whether there had been any cases of infantile paralysis among the babies supplied from the Straus stations. The reply was as follows:

"By careful inquiry among stations and watching Board of Health list daily, also following up Dr. Schuman's daily report, have not heard of a case of infantile paralysis among our children.
A. M. Nason, Superintendent.

NO CASES AMONG THE STRAUS BABIES.

At the same time Mr. Straus wrote as follows to the Commissioner of Health of New York City:

"I see a notice in the New York Times of August 5th, which states that in Saratoga Springs—'An investigation proved beyond a doubt that Infantile Paralysis was being carried in Milk, and that six cases and three deaths all were in the same milk route.'

"It is extremely probable that milk is one of the carriers of the germs and in part responsible for the spread of the Epidemic.

"I suspected this from the beginning when I issued the warning that wherever properly pasteurized milk cannot be secured—to boil ALL milk for adults as well as for children.

"I bring this to your attention, as I consider it sufficiently serious, and in hope of helping to check the spread of the epidemic, and I feel the more encouraged since of 2,100 children who are entirely fed on the Pasteurized Milk prepared at my Laboratory, up to a week ago, when I left home, not a single case of the disease had appeared.

"I am convinced that some of the milk which is sold in New York as Pasteurized has not gone through the SAFE GUARDING process.

"My advice would be to have the Health Department Inspectors make a rigid examination of all Pasteurizing Plants and make sure that the process employed produces perfect pasteurization. And also to warn housekeepers to keep the milk in covered vessels out of possible contamination by the House Fly. If kept in bottles the mouths of the bottles should be carefully wiped and all utensils carefully protected from dirt and dust—which means infection.

"When I began my Pasteurization Propaganda 24 years ago, Professor Jacobi told me that all my precautions to have the milk reach the people in perfect condition would be nullified, if the bottles were left uncorked; because in a short time the milk would be contaminated when exposed to the air of their homes. I then devised the round bottom bottles which compel corking.

"In conclusion I want to compliment you on the wonderfully fine work the Health Department is always doing and on all the many admirable measures you have evolved for the protection of the public during this epidemic."

"P. S.—Since writing above I telegraphed to my laboratory in New York inquiring as to the present conditions. From enclosed reply you see that, happily, the same fortunate conditions still prevail."

Commissioner Emerson, in reply wrote:

"We have failed to find any evidence whatsoever that milk has proved a factor in the spread of this disease, but we are continuing our studies on the basis of this possibility."

Mr. Straus directed his workers to make most careful examination of their records in order to ascertain beyond a doubt whether or not there had been any infantile paralysis among the babies supplied from

Nathan Straus



PASTEURIZED MILK LABORATORIES

FOUNDED 1892

348 EAST THIRTY-SECOND STREET, NEW YORK CITY

"Driftwood," Mamaroneck, N. Y.

September 9, 1916.

Dear Sir:

Having been engaged for the past twenty-five years in trying to save the lives of babies, I am deeply interested in the efforts that you and your associates are making to end the peril of infantile paralysis.

If I can show you 2,500 babies in New York City, scattered through various tenement districts, but constituting a class by themselves by reason of one circumstance in their lives--

If I can show you that every one of these 2,500 babies has escaped the plague of infantile paralysis which has seized over 8,000 victims in this city--

If I can do this, would you not look into the one condition that made these 2,500 babies different from others, expecting to find in that fact a practical clue to the prevention of infantile paralysis?

These 2,500 babies are daily supplied with pasteurized milk from my infant milk depots. Their condition is in no way different from other babies in this city, except that they receive milk that has been made safe food by killing the germs likely to be found in raw milk.

Proper pasteurization of milk has been proven to prevent tuberculosis, typhoid and scarlet fevers, diphtheria, septic sore throat and summer complaints of children. Does it not seem from my experience in this plague that it also prevents infantile paralysis?

I submit this to you and to your associates, inviting your examination of the records of my eighteen infant milk depots, hoping that you will find in the freedom of the "Straus babies" from infantile paralysis a demonstration of the utility of this method of preventing this terrifying plague.

I submit these facts to you in the interest of the little ones whom I have tried to serve and in the interests of the mothers, that they may be saved the bitter grief of losing their babies or of having them crippled by this dreadful disease which so far has baffled medical science.

Very sincerely yours,

Nathan Straus

The total number of cases in New York City up to the time the plague abated was 9,029, with 2,286 deaths.

his stations. Again he was assured that the records showed no cases. He then addressed a letter (see opposite page) to Surgeon-General Rupert Blue, of the Public Health Service, and to the chief scientists who were engaged in seeking to discover the cause of the plague.

Many appreciative replies were received, among them the following:

CABLE ADDRESS
ROKSTITUTE

THE LABORATORIES OF
THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.
65TH STREET AND AVENUE A, NEW YORK.

19th September, 1916.

My dear Mr. Straus:-

I have read with care your interesting circular letter of September 9th, and I believe that you are contributing a splendid service to the work of preventing the spread of contagious diseases. Your records also prove that your work has been of great benefit in checking the epidemic of infantile paralysis. May I express my warm appreciation of your efforts?

Yours sincerely,



Nathan Straus, Esq.,
Driftwood,
Mamaroneck, N. Y.

"ONE FACT THAT IS NOT GUESSWORK."

Commenting on these facts the New York Evening Journal on September 18, 1916, said editorially:

The work of Nathan Straus is shown wherever pasteurized milk is used, and diseases of children thus diminished.

The use of pasteurized milk, once sneered at by the milk companies, is now advertised by them as their greatest asset; once combated by the doctors, it is now hurriedly resorted to by them in every emergency. Pasteurized milk and its benefits, this and other countries owe to Nathan Straus, his experiments and generous spending of money during twenty-five years.

In institutions to which Mr. Straus has given pasteurizing plants the death rate of children has been cut in half.

In cities where plants have been installed by him or by the municipalities the death rate has been lowered immediately.

The public is familiar with the work that Mr. Straus has done, and is grateful to him for it. A new feature is the effect of Mr. Straus' work in the dreadful epidemic of infantile paralysis.

Nathan Straus' pasteurized milk laboratories feed every day 2,500 children in this city.

These children are of all ages, many of them infants for whom the milk is especially "modified" according to the formula of the great physician, Jacobi. Older children receive the milk in its full strength, but **ALL PASTEURIZED.**

These children are known; they belong as a rule to the less prosperous class, to those that gratefully take advantage of Mr. Straus' wise philanthropy.

We ask the public, and especially the doctors, to consider this fact:

Not one child using the pasteurized milk from the Straus Laboratory has had infantile paralysis throughout the entire epidemic.

Of these children, a majority live in the poorer quarters of the city, where cases of infantile paralysis have been most dangerous.

Mr. Straus' milk is distributed both in Manhattan and in Brooklyn. During the Summer while the cloakmakers were on strike and their children hungry, Mr. Straus supplied milk to a thousand families, and when the strike ended he continued his distribution in the Borough of Brooklyn.

It is true that thus far the actual cause of infantile paralysis, the nature of the disease, the way in which it is spread, and other points are to some extent matters of guesswork.

But there stands out one **FACT** that is not guesswork.

Of thousands of children using Nathan Straus' pasteurized milk, every one has been free from the dreadful disease.

Such a vital **FACT** looming up amid all the uncertainty, doubt and anxiety is of great public importance. It interests every physician whose mind like that of the great Pasteur himself is open to truth, willing to go wherever truth may lead.

One of the greatest physicians in this city expressed to us the opinion that it is milk that carries infantile paralysis infection.

This is of course not positively **PROVED** and investigation must continue in all directions.

But this opinion of a great physician, backed up by the absolute **FACT** that immunity from infantile paralysis has been granted to the children who have used Nathan Straus' pasteurized milk, deserves and must have most careful attention and study.

Meanwhile, on behalf of thousands of children who owe him their lives, of thousands of mothers who owe him peace of mind, we again express the public gratitude to Nathan Straus, wishing him a long life and the best of health to enjoy contemplation of the good work that he has done in the world.

PHILANTHROPIC WORK

By MR. STRAUS

Other than the Protection of Babies
from Raw Milk.

The Panic of 1893

Ice Plant at Santiago

Recreation Piers

Anthracite Coal Strike

Earthquake Victims

National Farm School

Unemployment in 1914-15

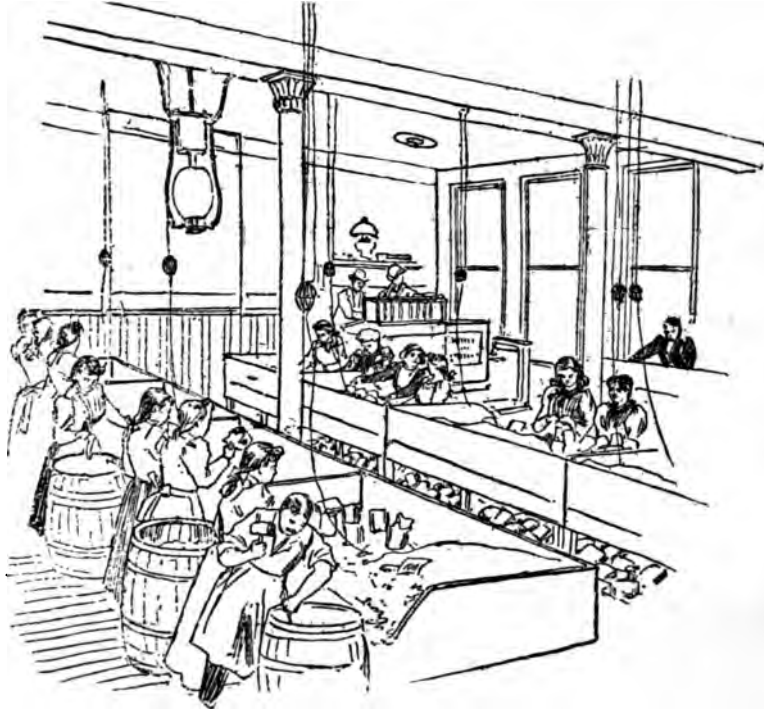
*Lockout of Cloak and Suit
Workers*

Tuberculosis Victims

Sanitarium at Duarte, Cal

Varied Activities

American Jewish Congress



NATHAN STRAUS RELIEF STATION, 1893-94.
Packing Room where groceries were put up.



NATHAN STRAUS COAL DEPOT, 1893-94.
Newspaper print of relief work done during the panic.

DEALING WITH POVERTY.

The establishment of the Infant Milk Depots in 1893 quickly led Mr. Straus into other philanthropic work by bringing him into personal touch with the tenement dwellers. He was among the first to see how their necessities were made acute by the panic of 1893, when over 39,000 families were left without means of sustenance through their wage-earners being without work.

Immediately Mr. Straus set about to remedy this condition. The first step was the establishment of coal depots. The people of the tenements bought their coal by the bucket, at from ten to fifteen cents for 15 or 18 pounds. Mr. Straus established depots in November, 1893, at which he supplied 20 pounds of coal for five cents. Obtaining 10,000 tons from J. Pierpont Morgan at a reduced price, and securing the free use of piers from the Dock Department for coal depots, the price was reduced to 25 pounds for five cents. In this way over a million and a half buckets of coal were supplied to the poor at a little less than the car-load rate. Much of it was supplied free on tickets that Mr. Straus distributed to the really needy through the charity societies.

This work attracted the attention of Mr. Morgan, who asked Mr. Straus to duplicate and extend the enterprise with \$50,000 that he offered for the purpose, upon the condition that his name should not be disclosed in connection with the gift. (This gift is conspicuous as the only instance in which Mr. Straus has ever accepted financial aid in his work.) He agreed to manage the work, the fund to be administered by a committee, and in January, 1894, he opened a store in Grand Street (see illustration on opposite page) where, for five cents, or upon presentation of one of the tickets issued through the charity societies (see next page), he supplied 25 pounds of coal, or a pound of bread, or 6 ounces of tea or coffee, or $1\frac{1}{4}$ pounds of sugar, or $3\frac{1}{4}$ pounds of flour.

The city was thronged with homeless men who could get no work, and for these Mr. Straus in January, 1894, opened four lodging houses at which he supplied bed and breakfast for five cents or on presentation of one of the tickets. This work was managed for him by the Rev. Charles H. Yatman, the evangelist, with remarkable success.

The number of persons lodged and supplied with breakfast was 64,409. A nominal charge of five cents was made for lodging and breakfast. Those who did not have the five cents were given some work to do around the lodging house and then were told that they had earned their lodging and breakfast. The essence of all of Mr. Straus' charities, the avoidance of pauperization, was thus maintained here also. In addition 49,531 other meals were furnished, for which one cent was charged.

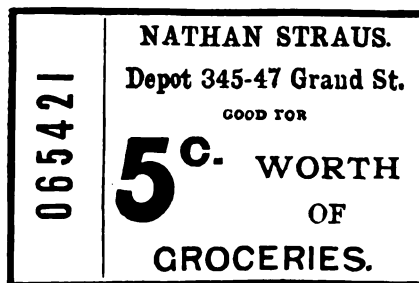
These plans proved so successful that Mr. Straus' methods have been adopted in other cities, particularly in Chicago, in similar emergencies.

At the coal depots and at the Grand Street store the following supplies were distributed:

	POUNDS
Coal	37,551,200
Sugar	375,150
Bread	370,694
Flour	151,508
Coffee	69,812
Tea	48,563

The total number of tickets sold was 2,217,262.

When the distress was abated and the coming of warm weather ended the need for the lodging houses, the equipment was distributed among the poor on the basis of a cot, three sheets, a pillow, two pillow cases, a pair of blankets, a rubber sheet and a chair for one five-cent ticket. This was so successful in promoting more sanitary living conditions among the poor, and especially in providing separate beds for consumptives, that the supply of cots from the lodging houses had to be increased many times to meet the demand.



REPRODUCTION OF ONE OF THE COUPONS.

ICE PLANT AT SANTIAGO.

During the war with Spain in 1898 Rabbi Joseph Krauskopf, of Philadelphia, was sent as a Special Commissioner by the National Relief Commission to minister to the soldiers in Cuba. He reported to Mr. Straus the serious need of pure water and ice for the American troops in Santiago de Cuba. There was a balance of \$15,000 left from the Mayor's fund, raised during the time of great distress in 1893-4 by a committee appointed by Mayor Gilroy, and to which Mr. Straus had been a large contributor. With the consent of the committee, Mr. Straus purchased an ice plant with a capacity of 13 tons a day and a water distillation plant with a capacity of 20,000 gallons a day. This he sent to Cuba, in charge of his secretary, who had the plant erected and operated at Mr. Straus' expense. The story is told by Dr. Krauskopf as follows:

"On the 25th day of April, 1898, the Congress of the United States declared a state of war existing between our country and Spain, and on the very same day was organized, in the city of Philadelphia, the National Relief Commission, of which the Rev. Dr. Joseph Krauskopf was a member.

"As head of a Committee of Camp Inspection, he was sent to the camps in Virginia, Tennessee, and Florida, and later to Santiago. Before sailing for the latter place, Mr. Nathan Straus, of New York, instructed him to confer with General Shafter, who was in command in Cuba, as to whether an ice plant was needed. Upon arriving in Cuba, Dr. Krauskopf conferred, immediately, with Gen. Shafter and Gen. Jos. C. Wheeler, who were delighted to hear of the generous proposition made, and they ordered Dr. Krauskopf to cable to Mr. Straus and to ask him to send it at once. Accordingly, the ice plant, worth \$20,000, with a capacity of turning out thirteen tons of ice daily, was shipped to Cuba about the middle of August.

"Its arrival was hailed with keenest delight, and its installation proved, immediately, a great blessing in the tropical climate of Cuba. Scores of lives were saved from death, and hundreds from disease and distress by means of this splendid benefaction.

"Full details, respecting this benefaction of Mr. Nathan Straus, to the American soldiers in Cuba, may be found in the Report of the Executive Committee of the National Relief Commission, submitted to the War Department in 1898-9."

Dr. Krauskopf also took to Cuba all kinds of provisions from his committee, to which Mr. Straus added a good proportion.

CHURCH AT LAKEWOOD, N. J.

Mr. Straus was not confined by religious boundaries in his work. At Lakewood, N. J., he cooperated with Mrs. Grover Cleveland and Lady McDonald, wife of the former Governor-General of Canada, in helping Father Healy to build a Roman Catholic church.



**CARTOON ON MR. STRAUS' FIGHT TO MAKE THE PIERS BENEFICIAL
TO CHILDREN.**

RECREATION PIERS.

It was because Mr. Straus started his work for the babies on the land end of an East River wharf that New York City now has Recreation Piers. He was quick to see that the mothers and children of the congested districts needed fresh air, which they could not get in the narrow streets in which they lived. But the air that they needed, the breezes from the East River, swept the pier on which stood the first Nathan Straus Laboratory and Infant Milk Depot.

So Mr. Straus asked the Dock Department to roof over the pier and make it a recreation place for the mothers and children of the East Side. This request was refused.

Thereupon Mr. Straus erected a tent on the pier, out beyond his laboratory. Under a canvas top, forty feet by a hundred, he placed benches and tables, and the mothers were quick to use this as a place of rest and refreshment. Thus he demonstrated the practicability of the plan, and again he urged the City to adopt the idea. On October 10, 1894, in an interview, Mr. Straus said:

"I would like to see these big open wharves all around the city utilized for the benefit of the poor — for their recreation, I mean.

"I think of the long lines of hot, dusty, dirty, built-up streets in this city, streets where the poor have to herd during the hot days and nights of summer. You walk to the water's edge, and there stretch out fine, broad wharves far into the water, swept by cooling winds and affording fine views.

"Now if these docks were only open to the poor what a boon that would be to them — but no, they are necessarily given up to commerce.

"But now, see here. We built on shore great buildings of many stories, all of which can be utilized. Now why cannot the same principle be applied to these docks?

"Why cannot skeleton structures be raised upon them, similar to the elevated railway construction, so as not to interfere with the work of commerce, and pavilions be built above where the poor may sit and enjoy the breezes and the scenery?

"This is my fad. I lie awake nights planning how it may be accomplished. I have all the details arranged, except how to get baby carriages up in the pavilion without building a long slant, which might interfere with the shipping."

Again and again Mr. Straus advocated the idea, with the result that the city finally adopted the policy of establishing Recreation Piers following Mr. Straus' plan of erecting a structure on the pier so as to leave the street level for shipping and utilizing the upper story as a place of recreation for the people of the congested districts. There are now ten such Recreation Piers maintained by the city, and on five of them Mr. Straus maintains Pasteurized Milk Stations during the summer. This idea of Mr. Straus' has been copied in many other cities both in this country and abroad.

When Mr. Straus sought to provide pasteurized milk on the Recreation Piers, he was denied the right to put booths on the piers, but he finally prevailed. The incident was characterized in a cartoon reproduced on the opposite page.

Comitato di soccorso delle Colonie estere di Napoli

PRO MESSINA E CALABRIA

VILLINO WEISS - EGIZIACA A PIZZOFALCONE 41

Napoli 27 Gennaio 1909.

Il latore Sig. *Lagani Angelo*
è autorizzato di ritirare dal deposito:

„NATHAN STRAUS“

Via Santa Lucia N.° 155A ore 10-12 e 3-5.

N.°

delle seguenti specie:

N.° 1 Pacco Riso

N.° 1 " Piselli

N.° 1 " Caffè

N.° 1 " Semolino

N.° 1 " Fave

N.° 1 " Zucchero

N.° 1 " di 6 rotoli Bisotti

N.° 1 Sacchetto di Farina

N.°

N.°

IL MEMBRO DEL COMITATO



M. Meissner

THE ANTHRACITE COAL STRIKE.

At the Mass Meeting in Cooper Union on October 8, 1910, called to persuade Mr. Straus to continue his milk stations, when unjust attacks had disposed him to drop the work, Father J. J. Curran, of Wilkes-Barre, revealed what had been known to very few. He recalled the great anthracite coal strike, which began in May, 1902, and which was estimated to have cost the country \$142,000,000. Father Curran, who has ever labored for the betterment of the condition of the miners, said that in August, after the strike had gone on for three months, he came to New York with another emissary of John Mitchell to engage Mr. Straus' good offices on behalf of the strikers. He told Mr. Straus that the operators were willing to take back the miners at an increase in their wages, but that the proposition had been rejected by the miners because the operators were not willing to bind themselves to take back all the strikers.

Father Curran related that Mr. Straus at once said: "I will pay the men who are not taken back and will support their families until the men secure work elsewhere."

As the outcome of this interview the late William N. Wilmer, with A. L. Kinkead and Sylvester Byrnes, Mr. Straus' secretaries, went to Wilkes-Barre to confer with the miners. And at the New York end Mr. Straus exerted every effort and all his influence, working actually day and night towards bringing the contending factions together. Using Father Curran's words, "Although in the background, Mr. Straus pushed the issue to ultimate success." Everything was so prepared that when President Roosevelt stepped in the second time, using the "Big Stick" on behalf of the miners, the strike was settled on October 17th.

In looking back over the strenuous times through which we have lived in the numerous efforts of Mr. Straus to help humanity, we realize that the coal strike episode was by far the severest.

RELIEF OF EARTHQUAKE VICTIMS.

Meanwhile, at the beginning of 1909, when the world was shocked by the earthquake in Italy, Mr. Straus rushed quantities of food, clothing and medical supplies to the stricken land at the first report of the disaster. In charge of a physician and an assistant from his New York Milk Laboratory he shipped on the steamship "Hamburg" on January 5th and on the "Barbarossa" on the 6th, medical supplies and provisions for thousands of families to Italy. The Hamburg American Steamship



FEEDING THE UNEMPLOYED.

**Food at One Cent a Portion at Nathan Straus Milk Station, City Hall Park,
Winter of 1914-15.**



UNEMPLOYED MEN SUPPLIED WITH MEALS.

Scene at Nathan Straus Milk Station, City Hall Park, Winter of 1914-15.

Co. and the North German Lloyd Co. both took these supplies to their destination free of charge.

Relief stations were set up at Naples and Messina, where the refugees from the earthquake region found medical relief, and where the distribution of the supplies was conducted in the most systematic and helpful manner. (See coupon on page 124.)

NATIONAL FARM SCHOOL.

Mr. Straus is also much interested in the excellent work of the National Farm School, and in September, 1915, sent them a generous donation. This Farm School was founded near Doylestown, Pa., in 1896, by the Rev. Dr. Joseph Krauskopf. He used his savings of a life time for a beginning. By arduous labors and unselfish devotion to the cause, the Farm School became the most successful institution of its kind in the United States. It fills a long felt want in giving Jewish young men the opportunity to "get back to the soil."

UNEMPLOYMENT IN 1914-15.

In December, 1914, when unemployment, following the outbreak of the European war, caused widespread distress in New York City, Mr. Straus sought to meet the situation by supplying food at one cent a portion through those of his infant milk depots that were situated in districts where the poverty was most acute. In addition some of the summer stations were opened for this work. (See illustrations on pages 126, 128 and 129.)

The plan was to supply a generous cup of hot coffee and a large roll for one cent, or a glass of milk and a roll, or a large cheese sandwich. The stations were quickly fitted up for this service and the work of feeding the unemployed was begun within a few days after Mr. Straus decided upon this practical means of relieving hunger.

Immediately self-respecting men and women, without means, who were obviously hungry, flocked to the Straus stations for food to keep body and soul together until they could get work.

The food was sold, not given away, so no one was subjected to the appearance of accepting charity, but each paid his or her cent and partook of wholesome, sustaining food. Many of these persons would certainly have gone hungry, but for this provision for them. Of course there were those who did not have even the one cent needed to satisfy



HOT COFFEE AND A ROLL FOR ONE CENT.

Scene at Nathan Straus Milk Station, Seward Park, Winter of 1914-15.



MEALS FOR THE UNEMPLOYED.

At Nathan Straus Milk Station, Tompkins Park, Winter of 1914-15.

their hunger, but Mr. Straus saw to it that discreet persons in the throng supplied the necessary coins to such absolutely penniless persons.

In the City Hall Park the demand for this food was particularly great, as that Straus station was situated in a thoroughfare through which throngs of unemployed men and women and boys and girls passed daily to and from the districts in which they sought employment.

For a time over 3,000 portions were served daily, but by the middle of April, 1915, conditions had so improved that the work was discontinued at some of the depots, but at City Hall Park food was served until May 20.

During this period the following portions were served:

Milk and roll for one cent.....	232,564
Coffee and roll for one cent.....	464,502
Cheese sandwiches for one cent.....	383,650
<hr/>	
Total	1,080,716



**UNEMPLOYED MEN GETTING MEALS AT NATHAN STRAUS DEPOT.
City Hall Park, Winter of 1914-15.**

No. 1437

SAVE THE BABIES

FREE DISTRIBUTION OF MILK

for the Relief of the

**SUFFERERS of the
CLOAK and SUITMAKERS' STRIKE**

Nathan Straus

NATHAN STRAUS PASTEURIZED MILK

SERIES JULY 1916

26

This Coupon is Good at any of the Following Depots:

348 E. 32d Street	54 Market Street	402 W. 37th Street
303 E. 111th Street	322 E. 59th Street	38 Macdougall Street
Tompkins Square Park, 7th Street and Avenue A		
Mount Morris Park, 116th Street near Madison Avenue		
Battery Park	East 3rd Street Pier	
Central Park	East 24th Street Pier	
Seward Park	East 112th Street Pier	
Educational Alliance	West Barrow Street Pier	
Roof Garden	West 50th Street Pier	

FOR

Five 6 oz. bottles, Formula No. 1, Eight 3 oz. bottles, Formula No. 3
or Five 6 oz. " No. 2, or Eight 3 oz. " No. 4
or Two 16 oz. bottles Pasteurized Whole Milk,
or Four 8 oz. bottles Pasteurized Whole Milk,
or Four glasses Pasteurized Milk.

Deposit required on bottles from everyone: 3 cents on each 16 oz. bottle; 2 cents on each 6 or 8 oz. bottle; 1 cent on each 3 oz. bottle; 2 cents on each stopper. This deposit is refunded on return of the bottle.

THIS TICKET IS GOOD FOR ONE DAY'S FEEDING.

REPRODUCTION OF COVER AND LEAF FROM BOOK OF COUPONS.
For Distribution of Milk for Strikers' Babies.

LOCKOUT OF GARMENT MAKERS.

When the lock-out of the cloak and suit makers in July and August, 1916, caused great suffering among the babies of the idle needle-workers, Mr. Straus arranged to provide milk *free* for these little ones, through his infant milk depots. In order to reach the sections in which there was the most need he opened additional stations in the Williamsburg and Brownsville sections of Brooklyn. The milk was supplied on tickets (see opposite page) distributed to the needy families through the labor unions. In this way 72,984 pint bottles of milk were dispensed.

The Brooklyn stations were kept open even after the strike was over, to enable mothers to get pasteurized milk during the infantile paralysis epidemic.

RELIEF OF TUBERCULOSIS VICTIMS.

Mr. Straus' first gift for the prevention of tuberculosis was the erection of a cottage in connection with Dr. Trudeau's work in the Adirondacks. This was over thirty years ago. During the years that followed he aided in many ways the establishment of sanatoria for the victims of the Great White Plague. But always the idea was uppermost in his mind that prevention was better than cure. Finally, in 1909, in the Tuberculosis Preventorium for Children, he put into operation a plan that had been forming in his mind for years. (See pages 135-144.)

JEWISH CONSUMPTIVE SANITARIUM, DUARTE, CALIFORNIA.

In the Winter of 1915-16, while motoring in the vicinity of Los Angeles, we came unawares into a rough road, and while hunting for a better one we noticed a half tumbled down sign, "To the Jewish Consumptive Sanitarium." We followed for some time the direction indicated without being able to locate the institution, and were on the point of giving up our search when we met a man who proved to be Mr. B. Cohen, the executive secretary of the sanitarium. He accompanied us to the institution, which we found to be a very poor one.

Being the only free institution of the kind in California, with a very limited income, it sorely felt the effect of the war, as the friends of the indigent consumptive diverted most of their former contributions to the alleviation of the European sufferers. The institution's deficit had been growing, with no prospect of raising any funds. The sanitarium had been in existence for three years only and was caring for forty consump-

tives. Mr. Cohen, when urged to speak openly, told us that their "treasury was totally deprived of funds and for nearly two months they had not paid their usual bills." The few cottages looked sadly in need of repair, the grounds desolate. In that beautiful California, not a tree, a bush or a flower to cheer those unfortunates; and the site could, with comparatively small means, be made a garden spot. Our deepest feelings were aroused and we at once decided to help the sanitarium.

We started collections among our friends at the different hotels and raised a cash fund. In addition, we built at our personal expense, a cottage to house six patients. This was erected so quickly that before we left the vicinity we assisted in most elaborate dedication ceremonies of the Nathan Straus Cottage. At this celebration additional funds were raised and another Cottage promised. The donor of the latter is Albert Kuppenheimer, of Chicago, and at our suggestion, he gave it in memory of his deceased brother, Philip, who had been a dear friend of ours. We have since been advised that this cottage also has been finished and dedicated. The Society is now on a sound prosperous basis. It has introduced many improvements and is filling a great need, as poor consumptives flock to the balmy climate of Lower California.

The management has repeatedly expressed its gratitude for our opportune assistance — they look upon our coming at the crucial time as providential.



NATHAN STRAUS COTTAGE.
Jewish Consumptive Sanitarium, Duarte, California.

VARIED ACTIVITIES.

While the prevention of disease being spread through raw milk was particularly the life work of Mr. Straus, he was keenly interested and active in other matters affecting the public good.

At the unveiling of the monument in Salem Fields, Brooklyn, in memory of the Jewish soldiers who lost their lives in the Civil War, he made an earnest "Protest Against War," which he regarded as legalized murder (see page 353). He cooperated in 1912 in the organization of the American Society for Judicial Settlement of International Disputes (see page 366), and in 1913 earnestly indorsed the work of the New York Peace Society (see page 366).

In "The Tragic Fight for the Public Health" (see page 355) Mr. Straus, on January 20, 1909, paid tribute to members of the Public Health Service who had laid down their lives for humanity, and in April of the same year, in a letter to President Taft, on "The Federal Health Agencies" (see page 356), he urged the strengthening of the power of the Public Health Service.

In 1910 Mr. Straus warmly applauded John D. Rockefeller's establishment of the Rockefeller Foundation (see page 357), and he defended the Rockefeller Institute for Medical Research against the attacks of the anti-vivisectionists (see page 357).

The twenty-fifth anniversary of the opening of the Adirondack Cottage Sanitarium led Mr. Straus to express his deep appreciation of the pioneer work of Dr. Edward L. Trudeau (see page 358).

He paid tribute to Senator Gallinger (see page 358) on the occasion of the 74th anniversary of the birth of the New Hampshire statesman.

Mr. Straus' views on poverty were expressed in a letter to the Rev. J. D. Herron (see page 364).

In "The Controlling Motive of My Work" (see page 359), Mr. Straus in 1913 replied frankly to a question put to him by "The Christian Herald."

Mr. Straus' attitude toward the medical profession was expressed in a statement written in April, 1915, for "The Medical Review of Reviews" and in several letters (see pages 361, 362 and 365).

On Jewish Hospital Night (May 4, 1915) in Brooklyn, Mr. Straus, in a speech indorsing the work, looked forward to the day when, through prevention of disease, we will need not more but fewer hospitals (see page 363).

On the occasion of the celebration of the 85th anniversary of the birth of Dr. Abraham Jacobi, May 6, 1915, Mr. Straus paid tribute to the dean of American medicine (see page 365).

"Peace the Only Word for Veterans" (see page 367) was an address delivered by Mr. Straus at a memorial service for Hebrew Union Veterans on June 16, 1915. In this speech Mr. Straus earnestly praised the peace policy of President Wilson and Secretary of State Bryan and commented on the admirable way in which the President met the "Lusitania" crisis.

His idea of "The Test of Character" (see page 368) was expressed in a letter to the Rev. John Haynes Holmes, December 15, 1913.

On October 19, 1915, on invitation of the Layman's Efficiency League, Mr. Straus delivered an address on "War and War Preparedness" (see page 369) in the Synod Hall of the Cathedral of St. John the Divine, New York City.

Though an active Democrat, strongly supporting his party in every campaign, Mr. Straus was not lured by public office. He served by appointment of Mayor Hugh J. Grant as Commissioner of Parks for the term of four years (1889-'92), and was President of the Board of Health in 1898, by appointment of Mayor Van Wyck. He was nominated for Mayor of New York City in 1894, but declined.

AMERICAN JEWISH CONGRESS.

On December 25, 1916, the United Committee for the American Jewish Congress elected Mr. Straus chairman of the Executive Committee of 140 which was charged with the duty of organizing a Congress to meet in Washington to demand equal rights for Jews in all lands. Delegates from more than a hundred cities were present and fifty-one national organizations were represented. The choice of Mr. Straus was hailed by the principal Jewish papers, with such comments as these:

"The election of Nathan Straus indicates best the state of mind of the delegates, representing all shades and opinions of American Jewry. Nathan Straus has been widely known as the best and most constructive Jewish philanthropist in the country, and people know that his participation in Jewish affairs is free from political and personal motives."

"It was fortunate that a man was found at that critical period who succeeded in uniting the conflicting groups. Nathan Straus is an international figure whose big-heartedness has been known for many years. During the war he has set the noblest example to the Jewry of the world by the sacrifices he has made for our starving people in the war zone. He belongs to no particular faction or party in Jewish life and is deeply concerned in the welfare of the entire Jewish people. Only such a man could have averted the danger that threatened to disrupt American Jewry on the eve of the Congress."

TUBERCULOSIS
PREVENTORIUM
for
CHILDREN

Mr. Straus' Idea of Saving Tenement Children

His Coining of the Name

Starting of the Work in the Cleveland Cottage

Opposition in Lakewood

Mr. Arthur Brisbane's Gift



"THE LITTLE WHITE HOUSE," AT LAKEWOOD, N. J.

With President and Mrs. Grover Cleveland at the Door.

(Building in which the First Tuberculosis Preventorium for Children was Established)

THE STORY OF THE PREVENTORIUM.

BY ALFRED F. HESS, M. D.

The Tuberculosis Preventorium for Children was opened in Lakewood, New Jersey, in July, 1909, as a concrete expression of Mr. Straus' long cherished dream to prevent the spread of tuberculosis among children. In March of that year, Mr. Straus offered his interest in the Lakewood Hotel property for the care of poorly nourished children who were exposed to tuberculosis in their homes. He felt convinced that if these children were once built up physically by a sojourn in the country, with good food, fresh air and a proper amount of rest and exercise, they would thereby develop a definite resistance to the inroads of this dread disease.

In order to start this work, he asked Mr. Marcus M. Marks to undertake the organization of this novel institution for the prevention instead of the cure of disease — a Preventorium rather than a Sanatorium. Mr. Marks seized the idea with much enthusiasm, organized a Board of Directors composed of leading physicians, active women and men of affairs, and they all set to work to develop this new phase of the anti-tuberculosis campaign.

It may be well to say a word concerning the idea which led Mr. Straus to suggest the formation of this, the first Preventorium in the United States. It was not mere chance, but the crystallization of a growing conviction among those who were actively interested in the study and prevention of tuberculosis, that this disease is contracted in early childhood and that greater effort must be concentrated upon this period of life if our tuberculosis campaign is to be considered in any measure complete and comprehensive.

Mr. Straus realized that there were thousands of children living in the tenements surrounded by tuberculous adults. Dr. Hermann M. Biggs, now the President of the Preventorium, estimated that New York City has 40,000 of these young unfortunates. It seemed that if any group of poorly nourished children are marked to fall by the wayside, it is these children of the tuberculous poor — children not only predisposed to tuberculosis, but actually exposed to this disease. Many of them are destined to die in childhood and thereby nullify the efforts of those who rescued them in infancy. Others will live to bring down the physical and mental standards of the rising generation and of the nation. The work of the Preventorium must therefore be looked upon not only as a tuberculosis activity, but also as a part of the child welfare work.

The Preventorium began on a very small scale when it opened its doors in July, 1909, to children at the Cleveland Cottage (see page 136)

in Lakewood, N. J., where our late President passed some of the last weeks of his life. There was at once a great demand for admission and a long waiting list of children anxious to be taken from their crowded homes to the healthy, free surroundings of the country, and the Directors were soon nonplussed anew with the need for a large institution.

In the winter of 1909-10, organized and determined opposition among the residents and property holders of Lakewood developed to the presence of the Preventorium, even though it was known that the institution did not admit any children who were tuberculous and who could in any way be a source of danger to their neighbors. The opposition was probably more because the encroachment of an institution in a residential section might lower property values rather than any fear of infection.

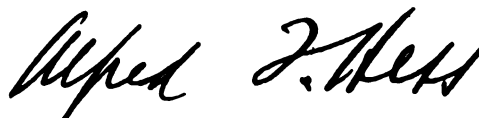
At this critical juncture, Mr. Arthur Brisbane came to the rescue with a gift of a one hundred and seventy acre farm at Farmingdale, seven miles north of Lakewood, with a beautiful hilltop as a building site. Mr. Straus made it possible to construct a new and model institution by the generous gift of \$50,000 for a building fund. With this money, together with other contributions, the new Preventorium was built. This plant consists of open air dormitories for children, administration building, power plant, two open air schools, and several other smaller buildings.

The children are admitted to the Preventorium through the Tuberculosis Clinics in New York City, and remain at the Preventorium for a period of three to six months. Under the wholesome conditions, they gain rapidly in weight, on an average of ten pounds. Until recently, only children between the ages of four and fourteen were admitted. This extension of the work to include younger children is very important, as infants are particularly susceptible to tuberculosis. If newborn babies are taken away from a tuberculous mother immediately, before they have become infected, their lives are surely saved.

It is peculiarly fitting that this provision for the infants should be taken up by an institution founded by Mr. Straus, as it is in line with the work to which he has devoted his life. As is well known, he has emphasized the danger to infants of bovine tuberculosis contracted through infected milk. Through the activities of the Preventorium he has attacked the tuberculosis of infants from another point of view, namely, infection from human sources.

It has already become evident that this Preventorium is but a precursor of other similar institutions which will be founded throughout the United States in connection with the larger municipalities. A number have already been established and every year adds some new number

to the group. It is likewise probable that Preventoria for infants will likewise be established when it is realized that only in this way can the babies be protected from their dangerous surroundings.



BEGINNING OF THE WORK.

The Preventorium had its beginning in May, 1909, when possession was taken of the Grover Cleveland Cottage, in the Lakewood Hotel grounds. It was adapted, under the personal direction of Mrs. Cleveland, widow of the President, the porch being arranged for six beds (see the next page) and the house for fourteen, these quarters being for girls. An open air camp about 100 feet long was built to accommodate twenty boys. (See next page.)

The first children were received on July 2 of that year, but no inkling of the fact was given until the plan had been put to practical proof. On November 9, after 92 children had been cared for for varying periods, and all had shown steady improvement, Mr. Marks made the announcement that the institution was in successful operation. He said:

"The Tuberculosis Preventorium for Children is the first institution of its kind in this country. The work has been inspired and made possible by the far-sighted liberality of Mr. Nathan Straus, whose active efforts to reduce infant mortality have already made him known the world over. Mr. Straus has presented to us the Cleveland cottage and surrounding eight acres of pine woods at Lakewood, N. J., and a majority of stock in the Lakewood hotel property, in which his investment amounts to \$500,000. There is no encumbrance or condition to this gift. We may either arrange to use the hotel property or to sell it and use the proceeds in constructing around the Cleveland cottage such buildings as we may require.

"Occupation of mind and body will second the good effects of the fresh, fragrant air of Lakewood, which, with its dry, porous soil, offers an ideal location for a Tuberculosis Preventorium. Practical instruction will be given in carpentering, cobbling, basketry, weaving, stencil work, metal work etc. Miss Dorothy Whitney has munificently endowed this department by a gift of \$100,000, the interest of which will pay for instructors, tools and materials.

"We have had substantial voluntary cash donations toward our running expenses from Mr. Henry Phipps, Mr. Isaac N. Seligman, Mr. Jacob Wertheim, Mrs. Walter B. James and Mr. Jacob H. Schiff in advance of our first appeal for funds."

OPPOSITION IN LAKEWOOD.

The efforts to thwart Mr. Straus' plan to save children from tuberculosis began within a fortnight with the arrest of the superintendent of the Preventorium on a charge of "bringing dependent children into the State of New Jersey." The next week one of the trustees was arrested on the same charge. All possible means were resorted to in the effort to abolish the institution. Throughout the long and bitter fight Mr. Straus gave unflinching support to the trustees, but kept silent



GIRLS' DORMITORY, TUBERCULOSIS PREVENTORIUM.
On Porch of Grover Cleveland Cottage, Lakewood, N. J.



OPEN-AIR SHACK FOR BOYS.
Tuberculosis Preventorium, Lakewood, N. J.

except on one occasion. He felt that the opposition was so ill-founded and so inhuman that it would soon defeat itself, but it was represented to him by a newspaper man that, as the originator of the plan to save children of tuberculous families from the doom that threatened them, the public desired from him some expression of his views upon the effort that was being made to throttle the Preventorium. He replied:

"It is incredible to me that any one should be so devoid of love and sympathy for his fellow creatures that he should say to the children who are threatened with the living death of tuberculosis, 'You must get off my part of the earth.' That seems to be the attitude of the small coterie of Lakewood cottagers who are seeking to deny to these children the God-given benefits of the outdoor life at Lakewood. But the majority of the citizens of Lakewood are not opposed to the Preventorium, nor is John D. Rockefeller, who has a large place there.

"And among those who are raising such a hue and cry against the coming of poor children to the Preventorium are the very ones who profit, without protest, from the coming to Lakewood of wealthy tuberculous patients, who are in the infectious stages of the disease while these children in the Preventorium are not in an infectious condition, and no objection can be urged against them unless it be that they are not to be sources of revenue.

"The arrogant selfishness of these people makes my blood boil. Would He, who said, 'Suffer little children to come unto Me and forbid them not, for of such is the Kingdom of Heaven'—would He thus attempt to turn the poor babies of the tuberculous tenements from the unique blessings that He has provided at Lakewood in the pine-laden air that alone can build them up and save them from the disease that threatens them?

"It is a harrowing commentary upon civilization that people should be found today so lacking in sense of humanity and responsibility for their fellow creatures as to be absolutely engrossed in their selfish pursuit of pleasure and luxury. I would like to take some of these people into the tenements and show them the living conditions of the little ones whom we are trying to snatch from the very jaws of death. Could they but see the breeding places of tuberculosis and the children born and reared in the poisoned atmosphere, they would not begrudge to them the fresh, health giving air of Lakewood. Thanking God that they are not so situated themselves, these very people, who now oppose the Preventorium, would open their hearts and their purses to this work, and would thank God that they had the privilege of helping to save some children from the wasting death of tuberculosis.

"How can these people look at their own well nourished children enjoying the unrivalled benefits of the Lakewood climate and then steel their hearts against the less-favored little ones of the city, and say to them, 'This is mine, how dare you breathe my air.' In the Bible of their religion there is a parable of a certain rich man that they might read with profit.

"The Preventorium plan proposes no harm to Lakewood. It is the most progressive plan yet devised for nipping tuberculosis in the bud. The method is to take young children who are not yet sources of infection, snatch them away from the poisoned air of their homes, and make them well and strong, as can be done no where so well as in Lakewood.

"Children who are already in advanced stages of the disease will not be received. The care that we are taking in the selection of children, for the protection of those who are in the Preventorium, is sufficient guarantee that no children will be taken to Lakewood who could by any possibility be a menace to the health of the community. And it should be remembered that no such care has ever been taken by Lakewood to exclude wealthy consumptives from the resort.

"The attitude of these very people in bidding for the patronage of the rich invalids and in advertising Lakewood as a resort for victims of tuberculosis, is the best answer to their attempts now to put up the bars against poor children, who are not yet victims of the disease, but who have been taken from tuberculosis surroundings that they may be saved while there is yet time."



TUBERCULOSIS PREVENTORIUM DINING ROOM.
Grover Cleveland Cottage, Lakewood, N. J.



CHILDREN BEING SAVED FROM TUBERCULOSIS.
In Preventorium, Grover Cleveland Cottage, Lakewood, N. J.

During this period Mrs. Cleveland wrote as follows:

Hotel Cecil; Lausanne, Feb. 4th, 1910.

Dear Mrs. Straus:

I cannot bear to speak of all the trouble at Lakewood. I am too indignant. I was too disappointed to find the work could not go on in the hotel and all as I had so fondly hoped. You can think how gratifying it was to me to contemplate that place in which my husband passed so nearly the last weeks of his life being given over to the alleviation of human suffering.

If I did not know God would deal with the selfishness which has prevented it, I should wish He might. But I am willing to trust Him. Beg Mr. Straus for me not to let it make him BITTER. I know the temptation. Let our Heavenly Father do the PUNISHING and just go on and do the best we can. I say WE because my heart and soul are so with this noble work. But I cannot bear to have him "let the iron enter into his soul."

We must fight, but without hatred or bitterness. Do you mind my saying this? I feel so strongly that we must try to keep a nobler attitude than our enemies, and it is so easy to fall to their level of motive and action. I know your gentleness of spirit and I feel sure you sympathize with my attitude and yet realize how thoroughly I get Mr. Straus's point of view and his RAGE.

Our best and affectionate wishes to you and all,

*I am very gratefully
Sincerely yours
Frances T. Cleveland*

The fight against the Preventorium reached the New Jersey Legislature and the courts of two states and became exceedingly bitter, but through the generosity of Mr. Arthur Brisbane, a refuge was provided for the children near Farmingdale, N. J., and they were cared for in the farm house until permanent buildings were erected in 1911.

Among the many newspaper comments on the opposition to Mr. Straus' efforts to save the children from tuberculosis was this editorial in the New York Evening "Sun" on Wednesday, December 22, 1909.

FOOLISH MR. STRAUS.

A foolish, opinionated, unreasonable man is Nathan Straus; it is difficult to speak with restraint of such a puling sentimentalist. He wants to save babies' lives! As if there were not plenty of babies in the world already, and Heaven knows where they came from.

Nathan Straus wants to establish a babies' hospital at Lakewood; he calls it a Preventorium. (This name is the only dignified and pretentious feature of his scheme, which is too farcical to consider calmly.) He wants to go down into that fortunate belt of land where the sun shines so warm among the pines, where the roughest winds do not blow, where Nature seems to have created a little eddy in which people may escape, for a while, the boisterous weather of which we occasionally get a touch, or several touches. Mr. Straus wants to invade this delectable country and build a Preventorium there—a hospital where sick babies can be brought back to health and merely ailing or delicate children may be so cared for as to prevent a pulmonary tendency from developing into an actual condition.

Out on him! Does he not know that this land of Lakewood is reserved for the well-to-do? Doesn't he know that the place is built up with hotels of importance, for important persons to come and spend money in? Do sick babies spend money? And do these spenders, with their automobiles and their champagne

diet, and their desire for the "exclusiveness" of a modern hotel where their own children are very much in evidence — and in the ear of an occasional more ostentatious seeker after quiet and the balm of the pines — do these good, open-handed spenders want an "Institution" for sick babies raising its uncongenial presence somewhere within the range of their gasoline drives? What an absurdity!

Mr. Nathan Straus has presumed too far on his reputation — gained, to be sure, in this non-sentimental community, where he has yet made everlastingly good — as a philanthropist. He has dared to allow his imagination to stray into the preserves of the aristocracy of money. And in the poor name of preventing the spread of tuberculosis among the little children of the poor. He has gone quite too far. We are sure nobody can feel the slightest sympathy with his silly scheme. A Preventorium for sick babies, forsooth! Enough to make a strong hotel keeper sick to hear him talk. And he is doing it — or wants to do it — with his own money! Was ever clearer proof of idiocy? Bedlam is broke loose, masters. The world is all gone wrong. The idea that, at this stage of the world's progress in wealth, civilization, and the combined attractions of the automobile industry and the hotel business, a strong hand is raised to protect that most defenceless of all human beings, the sick baby of a poor man — is a sad commentary on our boasted freedom. Why, not even the rich will be able to protect themselves any longer at this rate.

But still — unthinkable as it may be to the spenders — if Mr. Straus doesn't get the chance to build his Preventorium we miss our guess.

On becoming President of the Borough of Manhattan, on January 1, 1914, Mr. Marks retired from the presidency of the Board of Trustees, and was succeeded by Dr. Hermann M. Biggs. The untiring energy of Mr. Marks had securely established the institution, which is not only saving many children of the tenements from tuberculosis, but is serving as a model for similar institutions in many other parts of the country.

MR. STRAUS' GREATEST BENEFACTION.

Within the past year Mr. Marks wrote to Mr. Brisbane as follows:

Dear Mr. Brisbane:

February 29, 1916

With the other citizens of New York I agree with all you have ever said about Nathan Straus's work in forcing recognition of the value of pasteurized milk, and spending a large sum annually distributing pure milk to the poor. I speak with full knowledge and personal observation of the good that Nathan Straus has done among the poor people of New York, for at the very door of the building in which I work I have seen every day grateful men and women taking advantage of Mr. Straus's distribution of food below cost.

In the poorest neighborhoods of New York, which I constantly visit, I have seen mothers calling with cards given to them usually free, and, in every case, at less than cost, receiving milk perfectly prepared for their babies by competent physicians.

I think, however, that you have overlooked what will prove to be, in the long run, Mr. Straus's great contribution to the public welfare. I believe that his greatest benefaction was the initiation of the Tuberculosis Preventorium for Children. It was he, by his generous offer of his interest in the Lakewood Hotel property, and a subsequent substantial gift to the Treasury, who made the Preventorium possible.

The name "Preventorium" was a unique gift of his, and the spirit and idea of preventing the spread of the disease among children was greater still. Other institutions the world over have copied the preventorium idea, and Nathan Straus of all men fully understood the great blessing which flows from "prevention," rather than the much more difficult "cure."

With best wishes,

Very sincerely,



MR. STRAUS' WORK
in
PALESTINE

Soup Kitchen
Health Department
Workrooms
Site for a University
Pasteur Institute
Nurses' Settlement
Division of the Work
Official Report
Cholera
War Relief
Concluding Remarks



TYPICAL GROUP IN JERUSALEM.
The Holy Land Attracts All Races and Creeds.



OUTER ROOM, NATHAN STRAUS SOUP KITCHEN
In Jerusalem, Palestine.

WORK IN PALESTINE.

IN the Winter of 1904 we* made our first trip to the Orient. We traveled, as did most of the American tourists, on an itinerary, staying a few days at points of interest in the Mediterranean.

On reaching Jerusalem we changed our plans. Instead of making the customary excursions to Jericho, to the Jordan, to Damascus, we spent the entire time apportioned to Palestine, in Jerusalem proper.

All we saw in the Holy Land made such a deep impression on us that we gave up going to other places. Visiting the holy sites of which one hears and reads since childhood, watching continually scenes and life as described in the Bible, was most soul-stirring.

During the interval between our first and second visit to the Holy Land we had felt an intense desire to return there. We had learned more about it and about the numerous efforts being made in the United States to help along the regeneration of Palestine—the spiritual as well as the physical Palestine. Through our interest in these efforts we became acquainted with Dr. Judah L. Magnes, and prevailed on him and his wife to make the trip to the Orient in our company.

Consequently we sailed with them on February 3, 1912, on the S.S. "Laconia." We touched at Madeira, Gibraltar, Algiers, Monaco, and at every place we went ashore and visited the Rabbis of the towns, all fine men who gave us a strong foretaste of the people we were to meet in the Holy Land.

As this part of my book is mainly intended for our children, I take this opportunity of mentioning the last meeting with our revered brother and sister, Isidor and Ida Straus. We stopped (February 17, 1912) in Cap-Martin on the Riviera, where they were spending the Winter. We found Isidor in splendid condition; poor Ida, less so, as she had had a recent attack of her ailment. But both were in the most cheerful frame of mind and overjoyed that we came. We remained with them from morning until night, and every minute of the time was pure happiness to the four of us. For those few brief hours the hands of Time turned backward—our youth was revived, and with it the

*For convenience in writing I am using the pronoun "We." But the ideas were all my husband's, and I only acted as his secretary and helpmeet.

atmosphere of mutual love and devotion of those early years, when our existence was one harmonious whole of living and working together. Then we were contented and free from serious cares — just happy to be together with no disturbing elements between us.

We arrived in Haifa, Syria, on February 26th. From there we traveled by wagon, visiting all the Colonies * between Haifa and Jerusalem.

We arrived in the Holy City on March 5th at sunset. A brilliant sight met us — the city on the hills in the distance covered with flaming lights like a glorious picture of heaven and earth combined.

If on our former visit our deep emotions were affected by watching from a distance the life and strange old customs of the Jewish inhabitants in the land of their fathers, it was reserved for this time to get into closer touch with them. Nowhere else in the world does one meet such people. These Jews had lived through all the trials of settlers in a land which had been neglected and exhausted for centuries, and they had fought death, disease, misgovernment and all its sad consequences. But they had succeeded after twenty-five years of struggle and were in a fair way to prove what Justice Brandeis considers practical Zionism† — “that Palestine is fit for the modern Jew and that the modern Jew is fit for Palestine.”

* The first Jewish colony founded in Palestine was “Petach Tikvah.” It was established by Jerusalem Jews in 1878 and in 1883 was taken over by Russian Jews.

The actual work of the colonization movement was begun in 1882 with the founding of Rishon-le-Zion by Russian immigrants, assisted by Baron de Rothschild. This became the centre of the wine trade. Next in importance is the Colony of Zichron Jacob, started the same year by Roumanian Jews with funds from Baron Edmond de Rothschild, who founded it in memory of his father. This became one of the most prosperous and progressive colonies.

From that time on one after another was started until the outbreak of the war. So that there are today fourteen colonies of importance and thirty-three smaller ones, scattered all over Palestine. These have bought and developed land, erected houses, and have done all the work of settlers in a new country. In addition to the Jewish ones, there are seven German colonies, with a population of 1,700 (in 1910).

There is a French colony, so-called, in Jerusalem. Also, an English and a Russian one. These are quite unimportant and have only few settlers each.

In 1856 some Americans established an “American Colony” in Jaffa. This was afterwards sold to German Templars in 1868. And the American Colony moved to Jerusalem outside the Walls, where it still exists, with a population of about 100.

† “Zionism is a movement to give the Jews a home in the land of their fathers, where the Jewish life may be lived normally and naturally, and where the Jews may hope in time to constitute a majority of the population and to obtain what we have come to call Home Rule.”

“The Jewish Pilgrim Fathers in Palestine (Colonists) a generation ago took the first active steps to convert the dream of Zion into a reality. They felt that the longing that had animated the Jews during centuries of exile was a longing of deep significance, which represented the struggle for life of an ancient and gifted people, who could again do for the world things as great and glorious as they had done in the past, when they gave to the world its great religions and largely its system of morals.”

For Theodore Herzl it was preordained to become the leader of Zionism. He combined the small national Jewish and Zionist organizations which had previously existed in Russia, Germany, Austria, and Roumania, mainly composed of young students. They rallied around the inspired leader, who had suffered all the disappointments, even the indignities of the pioneer of a great idea. When his now famous work, “The Jewish State,” appeared, it loosened a regular flood of hatred. But it amazed and inspired as well, and caused the elevation of Herzl to the leadership of the scattered Zionists. In August, 1897, the first Zionist Congress was held in Basle, Switzerland.

This struggle had developed unusual characters, marked by unselfishness of purpose, devotion to the general cause, an entire sinking of individuality in the common good; and these characteristics distinguished them from other mortals. The high ideals of their life, the sacredness of their motives, their aspirations — all this left its deep imprint on us, as it must on anyone who comes to Palestine with an open mind.

THE SOUP KITCHEN.

Through many conferences with Dr. Magnes* and Dr. Aaron Aaronsohn,† and through visiting the Colonies and the Institutions in Jerusalem, we gained an insight into conditions and into the needs of the people.

The first result was the establishment of a free Soup Kitchen in Jerusalem. There had been one in existence on a limited scale, which for lack of funds had been closed. We engaged the same people, Rabbi Roth and his wife, who had been in charge, and they have had the superintendence of our Soup Kitchen ever since.

We began by feeding 300 daily. The class of people who avail themselves of this charity are the old, the blind and the physically defective, who are unable to work and support themselves. Innumerable old Jews from all lands come to Jerusalem to spend their last years in prayer and devotion, and they are entitled to the sympathies of their co-religionists on which they count on coming to the Holy Land.

We have been criticised for establishing the Soup Kitchen. It was said that it encouraged pauperism and that it drew an undesirable element to Jerusalem. None of these prophecies have come true. On the contrary, as war conditions developed, the Soup Kitchen, which had then been in existence two years, proved the most beneficial of our Institutions and a great boon to those unable to procure their daily bread. (See illustrations on pages 146, 150 and 152.)

* Dr. Judah L. Magnes, formerly Rabbi of Temple Emanu-El, New York City. Founder of the New York Kehillah and its leading spirit. Prominent in war-relief work: Was sent to Europe in summer, 1916, by the Joint Distribution Committee to study conditions, ascertain where relief was most needed, and the most efficient method of distributing it.

† Dr. Aaron Aaronsohn, son of one of the first Roumanian colonists in Zichron Jacob, Palestine, was educated in Europe and afterwards returned to Palestine to devote himself to scientific agriculture. Since its foundation he has been at the head of the Jewish Agricultural Experiment Station at Haifa, Palestine, which is an institution founded by Americans and financed with American funds. Dr. Aaronsohn is best known as the discoverer of wild wheat. He found the first specimen in the Jewish colony, Rosh-Kinnah. But the real discovery he made on Mount Hermon, where he found it growing in considerable quantities in many spots. He is making experiments with this wild wheat to demonstrate the possibility of cultivating wheat in arid regions.



WAITING ROOM, NATHAN STRAUS SOUP KITCHEN
Jerusalem, Palestine.



INTERIOR OF SOUP KITCHEN, JERUSALEM.
Nathan Straus Foundation.

HEALTH DEPARTMENT FOR PALESTINE.

The next step was the establishment of a Health Department for Palestine, with headquarters in Jerusalem. This was not an easy matter. Although we had no scientific or medical knowledge, the realization that urgent need existed for sanitary and hygienic reform came like an inspiration. Malaria was infesting the country — it killed numbers every year and disabled more from working. Absence of a sewage disposal system, shortage of water, and general neglect, which furnished mosquitoes with breeding places, were the primary causes of malaria. It was estimated that 25 per cent. of the population of Palestine suffered from the disease.

We engaged as head physician Dr. William Bruenn, who had been physician to the Colony of Chederah. He came from the medical department, University of Berlin, where he had distinguished himself by graduating with high honors. He emigrated to Palestine like many others, because he preferred the hardships of a colonist with equal chances, to the limitations from which a professional Jew still suffers in Germany. We also engaged Dr. Goldberg and a staff of students for the bacteriological department. We procured the necessary paraphernalia from Europe and in a short time the Health Department was ready for actual work.

The first undertaking was the fight against malaria. This was so successfully conducted that in 1913, after a year's labor, Dr. Bruenn made a report in which he describes the eradication of the disease in many places. This report was printed and distributed. Gradually other work was taken up, such as the prevention of eye diseases, mainly trachoma.* The Health Department was equipped for promoting public health and sanitation and for preventive measures generally.

WORKROOMS FOR UNSKILLED LABOR.

Our attention next centered on the fact that unemployment caused great distress among a large element who had settled in Jerusalem. In the Colonies, in the rural districts, agriculture offers work for all, but there are no industries for the city dweller. Thus third on the list of Institutions established during this visit were Workrooms for Unskilled Labor. (See illustrations on page 154.)

These workrooms are managed by Dr. Isaac Levy, director of the Anglo-Palestine Bank in Jerusalem. He started by making mother-of-

* Trachoma: A disease of the eye, very prevalent in the Orient. It is infectious, and often results in blindness if neglected, though it easily yields to treatment in the beginning.



WOMEN'S DINING ROOM.
Nathan Straus Soup Kitchen, Jerusalem.



MEN'S DINING ROOM.
Nathan Straus Soup Kitchen, Jerusalem.

pearl beads, which had been the industry of Bethlehem for centuries. In the course of time he added trinkets, also made of mother-of-pearl, and later still, he manufactured the staple article, mother-of-pearl buttons.

We have not heard much about the workrooms since the war began, but fear they are reduced in activity, as there is neither sale of trinkets to tourists, nor export of buttons. And mainly, those who would be able to work are at the front, taking their honest and brave share in Turkey's fight.

The secular press, as well as the Jewish, reports constantly deeds of bravery and daring achieved by our Jewish soldiers in the warring countries. Innumerable men among them have been decorated. Their heroic valor will forever put to shame the antagonistic claim of the anti-Semite that the Jews lack patriotism and courage.*

After our departure Dr. Levy also started a Domestic Science School for Girls. It did good work for a time, but was closed for lack of students.

In Dr. Levy's hands are all financial transactions in connection with our work, and to him, as President of the Anglo-Palestine Bank in Jerusalem, we have continued to send the necessary funds for the maintenance of our Institutions. The above bank was closed by the Turkish Government at the beginning of the war on account of being affiliated with a branch in London, England.

In order further to relieve the distress caused by unemployment, we contributed fifty thousand francs to the Bezalel Art School in Jerusalem. Professor Boris Schatz, Director of the School, complained that, for lack of funds with which to buy raw material, he was unable to give work to as many hands as his workrooms would permit. This contribution enabled him immediately to employ more men.

SITE FOR A UNIVERSITY.

During this visit also, on being informed that a piece of land right opposite the "Tomb of Rachel" was for sale, we bought it in order to prevent this holy ground from getting into undesirable hands. It is on the road to Bethlehem, four and a half miles from Jerusalem. We have repeatedly made requests, giving minute directions to build a stone wall around this lot and to have a sign put up as to its ownership. We have never heard if this has been done, nor have we ever received the title for this property. This is also the case with another plot we bought nearer Jerusalem on the same road. It is 31,757 "Quadrat Ellen" in area

* Maeterlinck, the Belgian poet, says: "One of the most striking phenomena of the war is the metamorphosis of the Jew—a man, whose mission on earth was peace—and who, now is to be found in the front ranks, fighting with Spartan stamina."



WORK ROOM FOR UNSKILLED LABOR.
Nathan Straus Foundation, Jerusalem.



NURSES' SETTLEMENT.
Inaugurated by Nathan Straus.

and we paid 80 centimes per Elle plus 10 centimes commission. The latter was originally intended to be used as a site for the building of a University. It is beautifully located, far up on a hill overlooking the Jordan and its entire valley, an ideal spot altogether. However, all that establishes our ownership to these two plots is the correspondence with Dr. Isaac Levy and the record of payments.*

After endowing a bed at the Schaare Zedek Hospital in our father, Lazarus Straus', name, and contributing to various other Institutions, our work in Palestine on this trip was finished.

THE NURSES' SETTLEMENT.

In January, 1913, we again sailed for the Orient. This time we took with us two trained nurses (Misses Kaplan and Landy) to attach to our Health Department in Jerusalem. We also invited Miss Eva Leon as our guest on this trip. She was born in Syria, had lived for years in Jerusalem, and was familiar with the customs, the language, the Institutions and the needs of the people of the Holy Land. As we afterwards decided to remain in Cairo and direct our work from there, Miss Leon's services were doubly useful.†

She conducted the trained nurses from Cairo to Jerusalem and installed them in a Settlement House (see illustration on page 154) which we rented and furnished for the purpose. She also initiated the nurses into their work and launched the dream of Hadassah‡ eventually to cover all the towns and villages of Palestine with the district nursing system by capable trained nurses.

The Settlement House centralized the work in Jerusalem and gave Hadassah a recognized place among the activities of the Holy City. Maternity relief cases are their principal work. There was dire need of their services, as there is no Jewish Maternity Hospital in Jerusalem. There are a few beds, quite insufficient in number, reserved for the purpose at the Schaare Zedek Hospital. And prospective Jewish mothers have the choice of going to missionary hospitals, which are established for the exclusive use of Jews, or have their confinements at home. From religious scruples they choose the latter, with the consequent misery and neglect. The trained nurses with the help of able midwives have greatly relieved this lack of provision for Jewish maternity cases.

* Original letters are filed with Palestine matter, year 1912.

† As an odd item of interest, I mention part of Miss Leon's expense account. "Salary of men to keep streets clean leading to the Wailing Wall. This work was done by special request of Mr. Straus."

‡ Hadassah is the Woman's Zionist organization in America. The Central Committee which manages its affairs is in New York City. The purpose of the organization is to promote Jewish institutions and enterprises in Palestine and to foster Zionist ideals in America. The inspiration for creating this institution came from Miss Henrietta Szold. She has been its President and guiding spirit since its inception in 1912. Up to the present (1916) 35 Chapters of Hadassah in as many cities have been established, and there is every prospect of extending the work.

Second in importance was their trachoma work — conducted under the direction of one of the physicians of the Nathan Straus Health Department — in fifteen schools, which are attended by five thousand children.

THE PASTEUR INSTITUTE.

In 1913 Dr. Bruenn came to Cairo to report to us about the work of the Health Department, which was eminently satisfactory. We discussed with him the extension of the scope of the work and he considered a Pasteur Institute a most necessary addition. The nearest Pasteur Institutes were in Constantinople and in Cairo. People bitten by mad dogs often died on the way before they could reach these distant places for help. Consequently we stopped in Paris (France) on our return and there personally made all arrangements. The management was very courteous. They offered to send one of their attendants to Jerusalem with a supply of serum sufficient to last until he had taught the Health Department how to prepare its own, all of which we accepted gratefully. In a month's time a Pasteur Institute, under the Bacteriological Department of the Health Bureau, was ready to protect the people against rabies.

DIVISION OF THE WORK.

Before this, however, other sera and vaccines had been prepared. On December 28, 1912, during the Balkan War, Dr. Bruenn was called to Tiberias to combat cholera, which had broken out among the troops stationed there. With the assistance of public and private officials, using the vaccine prepared by the Health Department, he was successful in checking the disease by treatment and preventive measures.

The Turkish Government gave official recognition to his services and sent one thousand francs to the Health Department as a token of appreciation of his services. Ever since the Health Department's offices have been requisitioned by the Government for medical help.

Even before our arrival in 1913 and during our stay in Cairo strong pressure was brought to bear from Berlin to obtain some branch of the Health Department. We received cable after cable from several professors urging our consent, which we were reluctant to give. But when finally our friend, Professor L. Landau, from Berlin, joined his voice to the others we could not resist. We ceded to the German Committee (non-Jewish) the Department of Malaria, and to the Society of Jewish Physicians and Scientists for Sanitary Improvement in Palestine (Head-

quarters in Berlin) the Pasteur Institute and the Department of Serology. We retained the Department of Hygiene and the Department of Bacteriology, under the name of Jewish Health Bureau.

These arrangements were made at a meeting in Berlin on April 10, 1913, at which Dr. William Bruenn, the Medical Director of our Health Bureau, was present.

Until Turkey entered the war, in November, 1914, these two German societies financed their respective departments. As far as we know, no contributions have been received from Germany since, and the expenses of all branches of the Health Department have been borne by us.

We know that our Institutions are doing good work in these trying times, though direct reports about the work have been few since August, 1914. The Government is making most extensive use of the Health Department for both the civil and the military population. (See letter from the Verein Jüdischer Ärzte fuer Sanitäre Intressen in Palestina, page 162.)

SEVEN HUNDRED FED DAILY.

The Soup Kitchen has extended its capacity, feeding daily about seven hundred persons. On holidays this number is exceeded. The distress is great, as most income has been cut off, living prices are high, the young men are at the front, and there are none to till the soil, or to earn wages. Rabbi Roth, the superintendent, writes every few months, telling us of the lives which have been saved from starvation by the work of the Soup Kitchen. I quote from his last letter:

"It is a pathetic sight which meets my eyes when I watch the seven hundred famished, miserably unhappy men and women, who come to the Soup Kitchen for their only daily meal. After partaking of the soup, meat, vegetables and cereals they leave refreshed in body and soul, murmuring prayers of gratefulness for your bounty. Without it they would certainly succumb to death by hunger. The magnitude of your benefaction can only be realized by an eye witness — by one who lives among these unfortunates and knows of their utter helplessness."

To aggravate conditions, in February, 1915, a pest of locusts over-spread the country and destroyed what little might otherwise have been harvested, in grainfields, vineyards, olive, almond and orange orchards.* For Palestine was fast becoming again the land where "milk and honey flow," when the Turkish Government, entering the war, put a stop to all improvements.

* These conditions were partially relieved by the New York Joint Distribution Committee, who assigned a certain sum as a loan fund to the farmers whose crops had been completely ruined.

OFFICIAL REPORT ON MR. STRAUS' WORK.

In January, 1916, we received a report about our Institutions from United States Consul Glazebrook in Jerusalem, which reached us through the State Department in Washington. Parts of the original are reproduced herewith.

THE NATHAN STRAUS INSTITUTIONS IN JERUSALEM



From Consul

W. A. Glazebrook

Jerusalem, Palestine, October 2nd., 1915.

At the beginning of the year 1912, Mr. Nathan Straus of New York accompanied by his wife, came to Palestine and after having studied the conditions in Jerusalem decided to create here three institutions which for some time have been in operation: A Soup Kitchen, Work Rooms and a Health Bureau.

I.

THE SOUP KITCHEN.

The institution which first began its activity was the Soup Kitchen. It was started in the second half of March, 1912, and since that time, until the end of 1914, it has daily provided soup and bread for 300 destitute people. At the beginning of December, 1914, this number was gradually brought up to 630 portions on account of the extreme misery in Jerusalem in consequence of the war. The Soup Kitchen is situated in the inner part of old Jerusalem, where the poorest Jews live. The food is healthy, palatable, and sufficient for the nourishment of a grown person. The Kitchen is administered under the supervision of Dr. Isaac Levy with competent assistants. The preparation of the lists of the poor is in the hands of a Comptroller who weekly distributes the cards among the poor. The superintendent of the Kitchen delivers the food against these cards. The meals are furnished in clean rooms outfitted with long tables and benches, the sexes being kept apart. I was delighted to notice how abundant, neat and orderly were all details of the actual dispensation of the Charity.

II.

THE WORK ROOMS.

The second of the Institutions created by Mr. Straus is the Work Rooms. The foundation of these Ateliers was the result of the suggestion of Dr. Levy, who told this noble philanthropist that to feed people was certainly a good work, but to prevent poverty by giving opportunity to earn food, was a much better one.

The Work Rooms opened in July, 1913, and are especially employed in the manufacture of Mother of Pearl ware. They comprise a small button factory

and a Work Room for souvenirs, curiosities and all kinds of dainty things made and carved in Mother of Pearl and frequently combined with wood, the black stone of the Dead Sea, the red stone of Jerusalem, silver, ivory, etc.

All the machinery is made to be driven by a large oil engine, but as petroleum is not to be had at present, it is now worked by foot. The material employed in the button factory is the Red Sea and the Persian Gulf shells. The refuse of the button shells is used in the manufacture of curiosities, so the two branches are helping each other.

With the enlarging of this manufacture, this industry would be able to give work to many hundreds of laborers, and according to the prices established in the Work Rooms, a good workman would be able to earn easily 80 Francs per month, which is a very acceptable wage for an ordinary workman in Palestine.

III.

THE HEALTH BUREAU.

This bureau has been in existence for two years and is divided into the following sections:

- (A) Hygienic.
- (B) Trachomic
- (C) Bacteriological.
- (D) Institute Station.

A.

I. HYGIENIC.

Systematic fight against endemical Malaria in Jerusalem, through:

- (a) Treatment of Parasite carriers of the city by Microscopic control, there having been from January, 1915, until August, 1915, 3,000 blood examinations.
- (b) Treatment of sick children in schools and precautionary treatment of healthy ones with quinine, gratuitously. This year 2,500 blood examinations have been made in the different schools.
- (c) Mechanical cisterns—metallic tops—made in the Jewish quarter Zicron Mosche.

II.

Chemical (milk, water, urine), histological and microscopical examinations for the different hospitals of the city, district and private cases:

- (a) Preparation of quinine tablets.
 - (b) Preparation of sterilized medicines for injections in Ampulla.
 - (c) Enlightenment of the population.
 - (d) Scientific publications.
- The publications issued up to this time by this section are:
- (a) Drs. Bruenn and Goldberg,
"The Fight against Malaria in Jerusalem."
 - (b) Drs. Bruenn and Goldberg,
"The Cistern Problem in Jerusalem."
 - (c) Dr. Bruenn.
"The Sanitation of Palestine."

B.

TRACHOMIC.

Systematic fight against endemical trachoma and other contagious eye diseases through:

- (a) Treatment of schools, and systematic daily treatment of children by Sisters of Charity under superintendency of special doctors. Up to this time twelve institutions numbering 1,500 children have been treated and supervised.
- (b) Eye ambulance for poor people in the poor quarters of the city. At present two such ambulances are employed and 600 patients are treated daily by special doctors.
- (c) Systematic examinations for statistical purposes in and out of Jerusalem, especially in six colonies and in Haifa.
- (d) Bacteriological examinations of eye secretion at the Bureau, the number being 600 from January to August, 1915.
- (e) Publications.

Dr. A. Feigenbaum,

A treatise on "Contagious Eye Diseases in Palestine and their Treatment," is now in press.

Report of last year's trachoma conference of the physicians in Palestine at the Health Bureau in Jerusalem.

C.

BACTERIOLOGICAL.

- (a) Examinations in hospital and for private people. From January, 1915, to August, 1915, there were 650 examinations.
- (b) Preparations of vaccine material against typhus and cholera, and Virus Danysz against the field-mouse.
- (c) Keeping up a microbiological and microscopical museum.

D.

INSTITUTE STATION.

This station is situated at the Colony Chedera near Haifa and is provided with a doctor, dispensary and nurse. It is carrying on a like combat there as at Jerusalem against Malaria. Another serious sickness common to Chedera is the black spotted fever, which is caused by the well known swamp Gasosa noted for its febrile danger. It will become one of the most important endeavors of this station to reclaim this dangerous Morass, thereby eliminating a very fatal disease.

The foregoing report is made after careful personal inspection and from first hand information. It is impossible for such a report to carry the full significance and value of Mr. Straus' excellent benefaction. No part of my varied acquaintance with the many wonderful things in this remarkable land has given me more satisfaction, or inspired me with more hope for the future of Palestine along the important Communal lines of Charity, Industrial Enterprise and Scientific treatment of disease, than these foundations.

All honor to Mr. Straus and men of like foresight and liberality. In the spirit of such benefactors is the possibility of the physical and material regeneration of the Orient.

W. A. Chapbrook

ANOTHER REPORT.

Below is another report which reached us through a friend, translated from the Hebrew daily newspaper, "Hacheruth," published in Jerusalem, March 20, 1916.

ACTIVITIES OF THE PASTEUR INSTITUTE IN JERUSALEM.

Dr. Beham, director of the Pasteur Branch of the Health Bureau in Palestine, handed us the following report on the activities of the Institute during the past month (February 15-March 15, 1916), a copy of which was submitted also to the Health Department of the City.

A. IN THE DEPARTMENT FOR HYDROPHOBIA.

The number of persons bitten who reported at the Pasteur Institute during the said month has reached 46 (six of them required no treatment).

Those bitten were: Jews, 19; Mohammedans, 26; Christians, 1; Soldiers, 24; Citizens, 22; Males, 39; Females, 7 (13 of them children).

1. The limbs or parts of the body affected: Face, 2; body, 1; arms, 15; legs, 32. (Note:—In two cases the arms and legs, in two other cases the face and arm were bitten at the same time.)

2. The animals that did the biting: Jackals, 1; cats, 7; dogs, 35; unknown, 3.

3. The abodes of those bitten: Jerusalem, 11; Jaffa, 7; Petach Tikwah, 4; Beer Sheba, 3; Damascus, Maan. Hafir, 2 each; Akka, Rishon Le Zion, Jamma, Ramleh, Egur, Akabah, Nabak, Bessan, Nazareth, Em-le-Peham, Joseph Omar, Chan Jonis, Gannili, Nablus, Or Shebi, 1 each.

B. IN THE SEROLOGICAL DEPARTMENT.

In this section the following tests were carried out:

1. Eleven tests of cases suspected of typhoid (one of them gave a positive result for paratyphoid bacillus, the remainder were negative).

2. Three tests of cases suspected of Maltese fever (all resulting in the negative).

3. Thirty-one cases suspected of syphilis with Wasserman's serum test (3 negative; 28 positive).

C. IN THE VACCINO THERAPEUTICAL AND POX DEPARTMENT.

1. Fourteen persons were treated for abscess and furunculosis.

2. One hundred and seventy-five persons were vaccinated against small pox (Jewish Orthodox and German Schools).

The section for preparing the small pox vaccine is continuing its work and is endeavoring to supply all Palestine and Syria with the vaccine, all drug stores, boards of health, the colonies and various towns.

TREATMENT OF CHOLERA.

Following is an announcement published in Jerusalem on September 1, 1916, in the newspaper "Aherouth."

JEWISH HEALTH BUREAU, JERUSALEM.

(NATHAN STRAUS FOUNDATION)

announces to the public that it has opened the following stations for the treatment of cholera through serum:

For the Poor Free of Charge:

(1) In the Zichron Tobiah quarter next to Mahaneh Juhudah at Eye Clinic No. 1.

(2) In the Old City, in the Armenian Quarter, at Eye Clinic No. 2, Polyclinic for Malaria.

Treatment at these two stations can be had every day from 4 to 7, in the afternoon, European time.

(3) In the Rothschild Hospital, every day, from 3 to 7 in the afternoon, European time.

For Persons Who Can Afford to Pay:

(4) At the Jewish Health Bureau in the Bacteriological Department (Director, Dr. Goldberg).

Treatment can be had from 4 to 7 in the afternoon, European time.

Cost of every injection, two gerush and a half zag.

DR. ARYE GOLDBERG,
For the Management,

WORK OF THE PASTEUR BRANCH OF THE HEALTH BUREAU.

Following is a translation of a letter from the "Verein Jüdischer Ärzte fuer Sanitare Intressen in Palestina," Berlin, June 16, 1916 — received in August, 1916, through the Zionistische Organization, Copenhagen, Denmark.

*Mr. Nathan Straus,
New York.*

My dear Mr. Straus:

We are addressing you in the name of "The Verein Jüdischer Ärzte für Sanitare Intressen in Palestine" on behalf of the Pasteur Institute in Jerusalem, which owes its existence above all to your generous help. We have recently had the opportunity to receive explicit verbal reports about its activity and about its condition. And from these reports, even more than previous ones, we have become convinced of the extraordinary blessing with which the Institute has exercised its functions specially during the war.

It manufactures vaccine against small pox for the entire Palestine, which can not be procured now from other countries on account of the blockade. Without this vaccine Palestine would be exposed to the most serious small pox epidemic. Until now sufficient vaccine for 60,000 persons has been produced, for which the army provides the calves. All towns and Jewish colonies get their necessary supply from the Institute.

Besides this work, the number of those bitten by mad animals and needing treatment against rabies is growing continually. Also the work of the Serological Department is steadily increasing through the epidemical diseases caused by the war.

If it should become impossible on the part of Jews further to support the Institute, its activities will have to be suspended, or the Turkish Government would take the whole work in its hands and have it managed by Turkish physicians. There is little doubt what in that case would be the fate of the Institute. In any case, nothing should be left undone to keep the hold on the Institute.

We ourselves are only able to help in a very modest way. Most of our number are away as army surgeons, and we do not see the possibility of making a propaganda for the raising of means. In spite of this there are just now small collections being made in Germany in order to send something to the Institute. But they are entirely insufficient, and we have therefore decided to address ourselves to you, honored Sir, to come to the rescue of an Institution in which you have taken such a deep interest since its foundation.

Very respectfully and devotedly,

(Signed) DR. HANS MÜHLENS.

WAR RELIEF WORK.

S OON after the war broke out and the reports of conditions abroad became more and more appalling, various means were devised in this country towards raising money for relief.

At that time our co-religionists in Palestine seemed the worst sufferers. The war had closed their usual channels of assistance and so damaged their trade that their very existence was threatened. Ambassador Morgenthau sent a cable from Constantinople, asking the Jews of the United States to come to the rescue of their stricken brethren in the Holy Land. And in little more than forty-eight hours a reply was dispatched by the American Jewish Committee, stating that \$50,000.00 would be sent.

Through the courtesy of the Standard Oil Company, their agents in Constantinople paid out the amount in gold against the fund which was deposited in their office in New York. At that time the United States Armored Cruiser "North Carolina" was heading for Syria and Palestine with consular relief. By cable request to the Department of State, permission was obtained to have an agent take the \$50,000.00 gold on the "North Carolina" to Jaffa (port of Jerusalem), and to distribute it personally throughout Palestine (September, 1914). In his report this agent says: "All honor to Schiff, Straus, Marshall, and the other contributors and organizers of the fund, who, in giving quickly, gave twice."

The main result, however, was far from satisfactory. During the first year of the war less than one million and a half dollars was raised, a pitifully inadequate sum in the face of such unprecedented calamity. Fate, as always, had decreed that our people bear more than their share of despair and misery in war-ravaged Europe, and they are said to be the most unfortunate and hopeless sufferers in every one of the belligerent countries.

To establish a precept and example Mr. Straus started on November 29, 1915, a new fund with one hundred thousand dollars.

This had a remarkable effect in awakening the conscience of the great masses of American Jewry. Committees were formed, meetings were held, notably the one in Carnegie Hall, December 21, 1915, the most fruitful in results. At this meeting, in the course of his address, Mr. Louis Marshall said:

"The Jewish people have never been derelict in their duty; when the day of trial came they never failed to arrive to the recognition of the needs of the hour. It is because the committee has recognized that fact that, at the instance, and upon the initiation of one of the noblest of our race, and the noblest of Americans, Mr. Nathan Straus, we are now about to launch a new campaign on a larger scale, with greater hope of success than ever before, in order to meet, to a slight degree at least, the great need which requires immediate alleviation."

President Wilson's "Jewish Day" proclaimed for public collection, became of great national significance and added a big sum to the relief fund.

PALESTINE FOOD SHIP VULCAN.

In March, 1915, the Committee appealed to the State Department and was granted the use of the United States Collier "Vulcan" as a Food Ship to take provisions to the Holy Land.

I herewith give a report of the Committee and an extract from its minutes:

1. Total expenditures for cargo and incidental expenses.... \$67,824.42
Food donations, secured through efforts of American
Jewish Relief Committee and Provisional Zionist Com-
mittee 35,723.70

Total \$103,548.12

2. The Vulcan left America on or about March 13, 1915, stopped at Alexandria for about a week during the third week in April, touched at Beirut April 20, and arrived at Jaffa about May 8. During the stay at Alexandria, additional supplies were purchased.
3. Of the \$50,000 contributed by Mr. Nathan Straus toward the Food Ship, \$13,978 was appropriated for the purpose and the balance of \$36,022 transferred to the General Fund with Mr. Straus' consent.

Extract from minutes of the Executive Committee of the American Jewish Relief Committee, April 11, 1915, on the subject:

"Mr. Nathan Straus stated that he makes an absolute grant of the balance of the \$50,000 which he pledged towards the provisioning of a food ship for Palestine (of which amount he had sent on account \$25,000, and of which \$13,978 had been used to meet his proportionate share of the deficit incurred in purchasing food stuffs for Palestine), and that the balance of \$36,022 was at the disposal of the General Fund of the American Jewish Relief Committee."

SALE OF STEAM YACHT.

In the meantime, we sold our steam yacht "Sisilina," as we did not feel justified in indulging in such a luxury when there was so much suffering. The proceeds of the sale, Nine Thousand Eight Hundred and Thirty-five Dollars, were applied as per letter from the Hon. Louis D. Brandeis, which follows:

February 21, 1916.

OFFICE COMMITTEE,
44 EAST 23RD STREET, NEW YORK CITY.

Dear Sirs:

Referring to the \$9,835 Nathan Straus Fund, which, under the terms of the gift, is to be applied by me in my discretion to Palestine purposes:

I understand from the recent reports made from Palestine that there is required for the feeding and other maintenance of the school children in the schools maintained by the Zionist Organization, and others to which our Committee makes subvention, the sum of \$1,000 a month in addition to the amounts appropriated from our relief funds for the children of the Jaffa Gymnasium.

Being convinced that to no work in Palestine would Mr. and Mrs. Straus be more desirous of giving aid than to the care and maintenance of needy school children, I hereby designate that as the purpose to which the \$9,835 shall be applied; and I direct that payments be made at the rate of \$1,000 a month beginning March 1, 1916. I request that there be sent now \$3,000 covering March, April and May requirements, and that thereafter sums be sent either in monthly or quarterly instalments until the full \$9,835 is exhausted.

Very truly yours,



The hope that the war would quickly end has long since proven a fallacy. The relief work has to be continued — conditions are getting from bad to worse. Already (October 11, 1916) we started a new fund with \$50,000.00, so that collections here and the relief abroad may uninterruptedly be continued.

CONCLUDING REMARKS.

OUR work has been chiefly non-sectarian. We have always adhered to the principle to give help where help is needed, and have contributed freely whether the cry came from Gentile or Jew. The two most important branches of our work, viz: the Pasteurized milk propaganda here and abroad, and the Health Department in Jerusalem, are by the very nature of their ministrations, open to all. The milk is provided without distinction of race, religion, or color, to anyone who applies. The beneficiaries of the Health Department in Jerusalem are made up of all nationalities, of all races, Orientals as well as Occidentals. When the German Committee in Berlin took over a branch of the Health Department they included in the agreement a clause "es muss interconfessional sein" (it must be non-sectarian), which, however, it has been from its inception. Referring to the same subject, Dr. Bruenn, in his first report, wrote: "The mosquitoes do not ask 'what religion, what nationality are you?' before they bite and infect with malaria."

During the Balkan War, in November, 1912, we sent Dr. Bruenn an amount for division among the Arabs. And again in 1914 a separate amount to provide bread for the Arab population of Jerusalem. I cite all this, to illustrate the non-sectarian character of our work.

We have entrusted our contributions for war relief to the Joint Distribution Committee, because they have unusual facilities for distributing funds throughout the entire war zone, and we felt certain that every dollar would by them be most conscientiously employed.

This book would be much larger if it contained an enumeration of all the big and little charitable works that my husband has crowded into his life of activity. His constant thought has been to use wisely, as well as generously, the power and the means that are represented in the results of a life of very hard work. I have only mentioned what is interesting through certain circumstances in connection with the gifts.

There are few weeks in his life in which he does not contrive some new original way of rendering service to individuals or to classes, unfortunate and in need of help.

With my husband, charitable practices began when he was young and quite poor; and as his fortune grew, based upon tireless industry and business genius, his charities grew in number and in volume.

That which he has given he could have given more easily later, but he always said, "I can wait to make more money, I cannot wait to give. The opportunity to make money will always be here. This particular opportunity to do good will be gone forever if I let it pass."

These charities have been, from the beginning, out of proportion to his income, often exceeding it in a given year, and compelling withdrawals from his capital. And when he allowed his charities to make undue inroads upon the money that commercial wisdom would have put into the business built up by his brother and himself, this brother, the noble and heroic Isidor Straus, not only offered no protest, but always most gladly encouraged the brother's charities before the brother's interests and often joined in his benefactions.

Lina Eutherg Straus

ESTIMATES
of
NATHAN STRAUS

By
Mary Marx Bernheim

and
Arthur Brisbane

AN APPRECIATION.

NATHAN STRAUS.

"Write me as one who loves his fellow men."

BY MARY MARX BERNHEIM.

Deeds speak so much louder than words that it seems presumption to add anything to the remarkable record which this book contains. It is difficult to find appropriate language for an appreciation of a man so genuine, so simple, yet with a breadth of outlook and a wealth of ideas for which genius is the only word.

Nathan Straus, whose great philanthropy has become a byword in the civilized world, is a man of the most simple manner and democratic tendencies. His great love for his fellow beings, and his innate goodness of heart, probably the two most prominent characteristics of the man, find unmistakable expression in his kindly face. You have only to meet him to feel that you are in the presence of one of Nature's true noblemen. The world has seen many men who have devoted their thoughts and energies to helping their fellows. But it has NOT seen many who have adhered to their ideals with such singleness of purpose and steadfastness of mind. Of Nathan Straus it may truly be said that he is one of those few rare men who completely forget self in the thought of others.

At the present time, when the pasteurization of milk is universally accepted as a necessity as well as a boon to humanity, it is hard to conceive what obstacles and prejudices the pioneer had to overcome in order to spread a knowledge which came to him like an inspiration.

Another inspiration was the Preventorium. The very name is a child of Mr. Straus' fertile brain. And again untold difficulties were surmounted before this dream became a reality.

As a rule men begin to give to their fellow men only when they themselves have accumulated a superabundance. But Nathan Straus gave liberally of his means when he was still quite young and a comparatively poor man. No cry of distress has ever reached him in vain, whether it came from a Jew or Gentile, from his neighbor or the stranger across the seas. One of his favorite Talmudic quotations is:

"What you give after death is lead,
What you give in sickness is silver,
And what you give in life is gold."

To him the accumulation of wealth has as justification and meaning the power of helping, in ever larger and more generous measure, the innumerable individuals and causes which unceasingly call forth his

ready sympathies. He has worked hard, very hard, for his success, but truly his life is a proof of the statement — "The strongest men do not care primarily for money; they want power, of which money is the best practical symbol. The final touchstone of a saving citizenship is in the uses to which this power is put."

Mankind is so constituted that though great disasters appal every one of us and readily call forth feelings of pity and fellowship, the majority becomes indifferent to the common, daily sights of suffering and privation. Of Nathan Straus this is not true. He has never grown callous or hardened to the everyday manifestations of the poverty which always surrounds us.

In all civic and national affairs Nathan Straus has taken a prominent part for many years and he has been among the leaders in almost all important public movements. In the best and highest, as well as in the party meaning of the word, Mr. Straus is essentially a democrat. His fellowship with all sorts and conditions of men is always easy and natural, and he is beloved by all those working under him, down to the lowest grades.

His family life is almost too sacred and beautiful a subject to touch upon. To say it is ideal may seem commonplace, but the commonplace in this instance becomes uncommon because of its verity. His wife is his helpmeet in every truest sense of the word, and never has any man been so blessed with a life-companion who entered more zealously and whole-heartedly into his high aims and endeavors. She has always helped him in all his undertakings with the most perfect comprehension and complete devotion, as well as unusual ability and a never-tiring industry.

"The reason firm, the temperate will,
Endurance, foresight, strength and skill,
A perfect woman, nobly planned,
To warn, to comfort, and command."

Mr. Straus' children also have ever been in absolute accord with all their father's generous undertakings and have assisted him with single-minded loyalty.

There is no better way to end these few lines than with the words of a well-known evangelist: "There would be more genuine Christianity on the face of the earth if there were more men like Nathan Straus."

Mary Mark Bernheim

New York, December 16, 1916.

Note:—Mrs. Bernheim is a daughter of Mrs. Nathan Straus' sister. She has been in the most intimate relationship in the family since her childhood.

NATHAN STRAUS, THE LIFE SAVER.

By ARTHUR BRISBANE.

If a man has really done something, you can tell his story in few words. For instance:

Napoleon — he made kings and ancient families ridiculous. He established the French Republic by trying to make it impossible.

Columbus — he doubled the size of the earth, gave a New World to the Old World. They put him in jail for his trouble — no need to say more.

Galileo — he turned the universe upside down. He made of the earth a grain of dust in infinite space, made tiny and unimportant that globe which before was the centre of all. They made him deny the truth on his knees — that is history.

Edison — he turned the lightning that frightened men into the light that they need and the power that serves them.

Marconi — he abolished distance and made space nothing.

Pasteur — showed men that their enemy is not the big thing, but the microscopic germ or microbe. He taught men that heat destroys disease germs, that attenuated virus makes the human being proof against germ attack.

Nathan Straus — in twenty-five years of hard work — has made Pasteur's discovery a life saving *reality*, saved the lives of hundreds of thousands of children and earned a permanent place in the hearts of mothers in every country on earth.

In this book devoted to Mr. Straus' work I have asked for space to say a few words about him, and have been told that I may have five hundred or a thousand words.

Not so many are needed to pay tribute to one WHO HAS REALLY DONE SOMETHING FOR OTHERS.

Many words are needed only for the lives of the non-workers.

This is the story of Nathan Straus.

Born in Germany. Brought to America a young child.

He spent his childhood in the South, did his work, not for himself, but for humanity, in the North.

His services rendered to all the children of the world have done more than the work of any other man to discredit and shame religious hatred and prejudice.

Ignorant prejudice has aroused in Nathan Straus only enthusiasm for good deeds, and good natured tolerance. Says he: "I am the last man to complain, as an individual, of prejudice against my people. But

for that, my father would have stayed in a small Southern town, and I should be there working now to build up a small Southern business."

Nathan Straus made money, automatically, he could not help it. His business genius created one of the great mercantile establishments in the world.

His philanthropic nature inspired him to devote the proceeds of a business success to the service of the poor.

He, and no other man, seeing the possibilities in Pasteur's great discovery, decided that the children of the world should not wait, in the usual way, long weary years before reaping the benefit.

He said to himself and to the public: Disease is carried in milk. The best food for children is the most deadly disease carrier.

Pasteur has taught the truth, but the world does not *know* it. I will **MAKE** the world know it. I will start in the only possible way, by giving to the children, as an example to States, nations and cities, the milk that carries only health, no disease.

Every year for a quarter of a century Nathan Straus has carried on his campaign that combines science and wise philanthropy.

He has fought the reluctant doctors, the selfish and ignorant officials, the grasping Milk Trusts, old foggy ideas.

The life story of Pasteur that every man should read, of Pasteur discouraged, attacked, misunderstood, is the story of Nathan Straus, spending his money, his energy, and at last triumphant in the work of making Pasteur's great discovery a real life saving force in this and in other nations.

What more can you say of a man than that he has worked hard all his life, and spent the results of his work to help and save the children of the poor.

What more can you say of a man of the Jewish faith, than that he has done more than any Christian to make real the teachings of Christianity?

These are the teachings that Christians read, and reading believe that they obey them.

"And he took a child, and set him in the midst of them: and when he had taken him in his arms, he said unto them,

"Whosoever shall receive one of such children in my name, receiveth me: and whosoever shall receive me, receiveth not me, but him that sent me.

"And whosoever shall offend one of *these* little ones that believe in me, it is better for him that a millstone were hanged about his neck, and he were cast into the sea."

Nathan Straus has set an example to all Christians.

The stations at which he distributes absolutely pure, properly prepared pasteurized milk "receive" tens of thousands of little children every year.

He has not been content to refrain from offending "one of these little ones," he has saved thousands upon thousands of them.

He has taught many cities in the United States, and many State Legislatures their duty in the protection of children.

He has established plants for pasteurizing milk in different countries in Europe and in many States of the United States.

Great cities in this country have made pasteurization of milk compulsory, the Milk Trust itself beginning by fighting Nathan Straus, has ended by imitating him.

To say that twenty-five years from now there will be alive in the United States a million human beings that would have died in infancy if Nathan Straus had never lived is a moderate statement.

There was a small boy in a little town in Georgia, fifty-eight years ago. His face was freckled, his hair was red, he was far from beautiful to look upon. He looked at red bananas hanging in front of the grocery stores, but could not afford to buy one. He was glad to hold a man's horse a long time and be paid ten cents for his trouble — he tells you so to-day.

Fifty-eight years ago in this little Georgia town, this boy looked out upon the world, seeking for opportunity, with his mind open to truth.

The genius of commerce was within him, it was impossible for him *not* to make money. The craving for truth and useful work was within him, and success did not diminish it. And when he made money HE SPENT IT FOR THE CHILDREN OF OTHERS.

As this is written, he has just been elected to preside at the world's greatest gathering of a Congress of all his people. Truly he is well chosen.

Long before this was written he was elected to preside as the good angel, in the hearts of tens of thousands of mothers whose children his practical, persistent, undiscouraged philanthropy has kept alive.

Great is the man who like Pasteur announces a scientific *truth*.

And great is the man who like Nathan Straus, *uses* that truth as the warrior uses his sword, and saves the lives of thousands.

Arthur Brisbane



Nathaniel Straus
Founder of Pasteurized Milk Depots for Infants
and of
The Tuberculosis Preventorium for Children

REPRINTS OF BROCHURES,
MAGAZINE ARTICLES,
ADDRESSES *at* CONGRESSES
and ON OTHER OCCASIONS,
and LETTERS *and* PAPERS *by*

Nathan Straus

IN FURTHERANCE OF THE
PASTEURIZATION OF MILK
AS A NECESSARY METHOD
OF SAVING BABIES' LIVES.



DIPLOMAS AWARDED NATHAN STRAUS FOR HIS WORK IN THE FIELD OF MILK PASTEURIZATION.

(Wall of Library at Residence)

HOW THE NEW YORK DEATH RATE WAS REDUCED.

BY NATHAN STRAUS.

(Reprinted from "The Forum" of November, 1894.)

MY efforts to do something to lessen the appalling sum of human suffering and sorrow which the figures of infant mortality in New York but faintly indicate were begun in the summer of last year, when I opened a depot where pure milk, both in its natural and sterilized form, was sold. From this experiment I received such striking demonstration of the good that could be accomplished by raising the standard of the milk supply of the poor that I resolved, if it were at all possible, to resume the work on a greatly enlarged scale this year. For the protection of the children of the poor, the milk must be sterilized before being sold.¹ I believed that if this could be done on a scale large enough to make an impression on the supply, the sum of infant mortality in New York might be sensibly reduced. I determined to make the attempt, at least, and in opening six milk depots at the beginning of the past Summer deliberately addressed myself to the task of reducing the death rate of the city.

There is a great deal of waste in the world, but none quite so reckless as that of human life. Here in New York the lives of thousands of children are sacrificed every Summer, simply and solely because they are fed with impure milk. Of people who die in the State of Maine every year, children under five years of age count for less than 20 per cent.; of those who die in New York City, over 40 per cent. are children under five years of age.

It is the mortality of June, July and August that chiefly accounts for the large percentage of this annual harvest of death. Within a radius of twelve miles from the New York City Hall, three children die during the heated term for every adult; and certainly two out of every three represent a sacrifice which is a disgrace to our civilization to allow. Within the area of what may be called the metropolitan district, the record of one week showed the total mortality to be 1,038, of which 713 deaths were under five years, 664 under two years, 529 under one year, and only 325 over five years of age. Here was 64 per cent. of one week's death-roll composed of babies under two years, who drank but little water, and were almost wholly dependent on milk for their nutriment. Could the "destruction that wasteth at noon-day" have been more palpably present than death in these children's milk-bottles?

¹Here let me say that the penalty of disease and death, paid for the neglect of simple precautions in the use of milk, is by no means paid exclusively by the poor. Milk is not always good in proportion to the price paid for it, nor free from the germs of contagion because it has come from cattle of aristocratic lineage. The latter quality, as recent experience has shown, carries with it a special susceptibility to tuberculosis. In milk intended for infant nutriment perfect sterilization is an absolutely essential precaution; but, simple as the process is, it is not always certain, even in the homes of the rich, that it will be properly done. I hold that in the near future it will be regarded as a piece of criminal neglect to feed young children on milk which has not been sterilized.

The conditions of a wholesome milk supply are simple, but, like a good many other simple things, difficult of attainment. These conditions are healthy cows, clean stables, clean and careful processes of milking, and prompt transfer of the milk, in perfectly clean and close vessels, from the cow to the consumer. In the milk supply of all great cities every one of these requisites is flagrantly violated. The inspection of cow-stables to detect the presence of disease is neither careful nor constant; milking is done in most cases under conditions indescribably filthy, and most of the milk consumed by the children of the poor is at least thirty-six to forty-eight hours old before it reaches them. It is a simple matter to understand — as Professor Sedgwick of Boston puts the case —

“ — how this rich animal fluid — sterile at the start, but drawn by unclean hands into half-clean pails, and meanwhile sprinkled from above by the dust of the stable, by hairs, dandruff, dirt, and particles of excrement from the skin and udder of the cow vigorously shaken by the milker or brushed by his hat — becomes infested with organisms. That these multiply swiftly and enormously in the warm and rich fluid, well aerated by the act of milking, is also a natural consequence of favorable conditions; and if we allow time also, the wonder is, not that it contains so many germs, but rather that it is still potable at all.”

Mr. William M. Babbott, of New York, who has issued an instructive little monograph on the connection between milk supply and disease, uses still stronger language in regard to the character of the milk sold in New York and Brooklyn. He says:

“If milk gave the same outward appearance of decomposition or fermentation as is shown by vegetables, fish or meat, more than three-quarters of all the milk consumed in the metropolitan district would be condemned as unfit for human food; if its pollution could be perceived, it would be loathed; and if the disease germs could be as plainly seen as a pest-house, the death-dealing milk would be as soon dreaded and shunned.”

It is unquestionably true that no plague by which the city was ever ravaged has yielded so plentiful a crop of deaths as that which is reaped from the seeds of contagion deposited in the infant system every Summer by millions of noxious bacteria developed in milk.

The sterilizing laboratory which I established last year was this year very much enlarged, and every preparation was made to meet the demands likely to be made on it. The cows from which the milk was obtained were examined by the veterinary surgeon of the New York Board of Health, and the stables and dairies made a subject of careful inspection. The milk was iced in transportation and kept on ice till it was turned into the bottles for sterilizing. The apparatus used for the purpose was made under the direction of Dr. R. G. Freeman, of New York. The milk is exposed for twenty minutes to a temperature of 167° Fahrenheit. It has been demonstrated that tubercle bacilli die at 158° Fahrenheit, when submitted to that temperature for ten minutes. It is therefore reasonably certain that by this process all noxious germs in the milk are completely destroyed, while the nutritive qualities of this most perfect of nature's foods have not been in the slightest degree impaired. In the preparation of modified milk for infant feeding, two formulæ were adopted, one by Dr. R. G. Freeman, and the other by Dr. A. Jacobi. Both of these have been, and will during the Winter continue

to be, sterilized in six-ounce bottles, sold at a cent each. In addition to these modified milk foods, barley flour was sold. This was intended to meet a want, keenly felt by the poor, of wholesome nutrition at a price within their means, for children beyond the infantile stage.

During the hottest part of the Summer the laboratory was kept running to its full capacity, night and day, to prepare sufficient sterilized milk to meet the demand. This was so active and so constant as to exhaust the stock in the depots daily, but it was a rigidly observed rule that, without respect to demand, no bottle of sterilized milk should be sold twenty-four hours after it had been sterilized. The Health Board's free doctors, the dispensaries, the "World's" free doctors, and nearly all the hospitals and charitable organizations took an active interest in educating the people as to the value of sterilized milk. Order-books containing a hundred of the following coupons were placed without cost, and without restriction as to quantity, at the disposal of any physician giving his services freely to the poor, or to any charitable organization applying for them:

This coupon is good at any of the following depots:

Foot of East Third St.; 317 East Ninth St.; 147 Eldridge St.; 22 Market St.;
201 West 63d St. and 324 East 59th St.

for

5 6-oz. bottles Milk and Barley Water, Formula No. 2; or

5 6-oz. bottles Milk and Lime Water, Formula No. 1; or

4 8-oz. bottles Sterilized Pure Milk; or

2 16-oz. bottles Sterilized Pure Milk; or

One-half pound Barley Flour and 2 8-oz. bottles Sterilized Pure Milk.

Deposit required on bottles from every one; 3 cents on each 6 or 8-oz. bottle;
5 cents on each 16-oz. bottle.

NATHAN STRAUS.

This Ticket is good for only one of the foods.

By permission of the Dock Department I erected on the pier at the foot of East Third Street, within a few feet of the milk laboratory, a large pavilion provided with comfortable seats, which were given to the unrestricted use of women and children. I also placed benches under the pavilion erected on this same pier by the Dock Department. My purpose in this was to furnish a free fresh-air resort for mothers who could not get through with their home duties early enough to catch a boat which sailed on schedule time. The tent was open all day up to midnight, so that at any hour a mother could bring her child and enjoy the fresh sea air without having tired herself out in a rush to catch an excursion and probably unfitted herself for the proper care of the child. The central depot being situated on this pier, all the resources were at the command of those who used the rest and shelter provided. A physician assigned by the Board of Health was constantly in attendance. On hot days a thousand women and children could be

found at almost any hour enjoying the shelter, and so impressed have I been with the benefit thus afforded that I have determined to use all my influence to have such outing places, protected from the sun, erected on the piers that belong to the city. This can be done without interfering with traffic facilities, by putting benches on the roof of the pier, and covering them with an awning.

Free lectures under other auspices were given twice a week by experienced physicians, on the proper care and feeding of infants, and every opportunity was taken to bring home to mothers the knowledge that the best possible food for their children could be obtained at a nominal price. The sale of sterilized milk for babies at the six depots aggregated, up to the end of September, 280,000 bottles, or over 2,500 bottles a day. No record was kept of the number of sick children for whom sweetened and diluted sterilized milk in bottles was prescribed, but it was estimated that a daily average of 700 babies were fed on this modified milk. It is safe to say that some thousands of children, who were sick, owe their recovery during the Summer to its use. On this point the returns of the Bureau of Statistics present eloquent testimony, as the following comparison between the number of deaths of children in New York under five years of age, this year and last, will show:

	1894	1893
January, February and March.....	4,508	4,108
April, May and June.....	4,521	4,386
July	2,560	2,796
August	1,559	1,686
September (to the 13th).....	317	386

The Summer of 1894 was a much more trying one for children than that of 1893. The average temperature of the latter part of June, of the whole of July, and a part of August was unusually high, and all conditions tending to the increase of the intestinal disorders which are chiefly accountable for infant mortality were correspondingly aggravated. As a matter of fact, the sanitary condition of the city had undergone no radical change, and the system of tenement-house inspection was not less thorough last year than this. Sick-children's funds, and other forms of charitable effort for the benefit of the poor, were not less liberally supported in the Summer of 1893 than in that of 1894. All the external conditions, in short, led to the expectation of a higher death rate in the Summer of 1894 than in the one preceding; and, even had other things been equal, the increase of population would, without an increase of the rate, have been accompanied by a larger number of infant deaths. But it will be seen that since the opening of the pure milk depots the number of deaths among children has sensibly decreased. During the first quarter of the year there was an increase, as compared with 1893, of nearly 10 per cent.—considerably in excess of a normal percentage—in the deaths of children under five years of age. For the second quarter, forty days of which were covered by the distribution of pure milk, the increase over 1893 was only a little more than 3 per cent. For the month of July there was a decrease, as compared with July, 1893, of nearly $8\frac{1}{2}$ per cent., in the number of infant deaths; for August

the decrease was $7\frac{1}{2}$ per cent., and for September 18 per cent. Allowing 3 per cent. as the normal average of increase under the most favorable conditions, it will be seen that there has been a reduction of over 10 per cent. in the Summer mortality of infants in this city.

Further analysis of the figures show results even more striking. The month of June started in with an exceptionally high mortality of children under one year. In 1893 this month showed 878 of the infant deaths; in 1894 the number rose to 1,076 – an increase of $22\frac{1}{2}$ per cent. Of children over one year and under two years of age, the deaths for June, 1893, numbered 247, and for June, 1894, 267 – an increase of over 8 per cent. Necessarily, it took some time to make the existence of the pure-milk agencies known to those for whose benefit they were intended, and to educate mothers into the necessity of having recourse to them. For July, when the system was fairly in operation, and its advantages generally known, the deaths of infants under one year numbered 1,918, as compared with 2,063 for the corresponding month of 1893 – a decrease of over 7 per cent. In the same month the deaths over one year and under two years of age were 381, as compared with 440 for July, 1893 – a decrease of over 11 per cent. For August the figures are equally suggestive, there being a decrease in the one-year class from 1,152 to 1,086, and in the two-year class from 402 to 265. This last decrease represents a ratio as high as 34 per cent., and as every mother knows the dangers attending the second year of infant life, the figures have a very direct bearing on what I must call the preventable average of infant mortality. I think I may safely claim that much of the diminished aggregate of children's deaths which happily distinguishes the Summer of 1893 from that of 1894 has been due to the establishment of the pure-milk depots, and the very large decrease in August of deaths among children between one and two years of age would be quite unintelligible without this explanation. I make these assertions, not for the purpose of claiming personal credit for a work which has yielded me more pleasure than I can well describe, but with the hope that others may be tempted to enter the same field. It is much too large a field for any one man or organization to fill, but I have written to very little purpose if I have not shown it to be one in which there may be gathered a most abundant return for well-doing.

By way of divesting the public mind of the idea that sterilized milk was a medicated compound, and in order to supply poor people with a wholesome and strengthening Summer beverage, I obtained permission to open booths for its sale in the public parks. There were nine of these, and soon I found that the demand for sterilized milk at a cent a glass was so great as to transcend the resources of my laboratory. This I had occasion to reinforce by the provision of another apparatus elsewhere for the preparation of one of the infant foods; but even then I was compelled to have recourse to the Appleberg Company for a supply of sterilized milk for sale at the park booths. Desirous as this company was to second my enterprise, the demand exceeded all possible supply by fully one-half, and what was lacking in the sterilized product had to be furnished in the form of raw milk from the dairies. At all of the regular depots I also sold raw milk in sealed cans. My purpose was to give a practical demonstration of the fact that pure milk can be

obtained and sold at low prices. The demonstration has, I trust, been a convincing one, and its effect has undoubtedly been to elevate the standard of milk sold by small grocers throughout New York City. With the advent of cool weather the depots were closed, but the sterilizing laboratory will be maintained during the year, so that any one desiring to obtain the sterilized milk, either in its simple or modified form, during the winter, can do so.

At the Park depots there were sold (up to September 30) 572,150 glasses at one cent each, and in the height of the season the number of people employed was 58. The sales of milk in all of the places (depots and booths) aggregated 400,000 quarts.

I have been frequently asked as to the possibility of placing such an enterprise as the one I have outlined on a commercial basis, that is, of conducting it at least without loss. I must say that my experience sheds but little light on such a question. I set out with the definite purpose of reducing the infantile death rate of the city, and that could be done only by dismissing all considerations of trouble or expense. Every new depot that was added necessarily increased the cost of the business, for the expense of distributing the sterilized milk for babies to the branch depots was about as much as the price charged for it. The work, in short, as conducted, was one in which the only possible gain was that of human lives; but that is surely a gain to which all commercial and economical considerations must be held to be subordinate.

My work could undoubtedly be duplicated at a very much lower cost than it entailed. I had but little experience to guide me in arranging the details of the business, and the high price of milk which was a consequence of the Summer drought, no less than the unexpected magnitude of the demands made by my customers, contributed to the increase of expense, which in the future might be avoided. Pure milk in its natural form could probably be sold without loss from one great depot situated close to the point of delivery by rail or steamer, at prices slightly higher than those which I established. Milk in the sterilized form, put up in bottles for use in the nursery, would cost, on a commercial basis, quite double the prices paid for it at my depots.

I beg leave to repeat here what I have elsewhere said, that I consider the furnishing of pure milk the most important benevolent undertaking with which I have been connected, and I may be pardoned for referring with some personal satisfaction to the fact that my New York experiment has been in all of its details repeated with most satisfactory results in Yonkers and Philadelphia.

LETTER TO THE MAYORS OF THE PRINCIPAL CITIES.

New York, June 8, 1895.

To His Honor, The Mayor.*

I have received so many letters of inquiry from municipal authorities, physicians and others throughout the country in regard to my work in providing pure milk nutriment for the sick children of New York, that I have been prompted to prepare the following items of general information for the guidance of those whose public position or personal sympathies may give them a special interest in trying to reduce the sum of infant mortality. It is a fact which unfortunately requires no demonstration, that many thousands of infant lives are annually sacrificed for the lack of a pure milk diet. The harvest of death is especially abundant in Summer when intestinal complaints are most prevalent among children under five years of age. The infant nourishment commonly accessible to the poor is in hot weather so often replete with the germs of disease that it is the rule rather than the exception to find in the food relied on to sustain life the instrument of death.

This yearly "slaughter of the innocents" goes on in small communities as well as in great cities. A neglect of simple precautions in the use of infants' food will produce the same results everywhere. I have long held that the day is not far distant when it will be regarded as a piece of criminal neglect to feed young children on milk that has not been sterilized. I have addressed myself during the last two years to the task of placing within the reach of every poor family in this city absolutely pure forms of infant diet. These have been either milk carefully sterilized without admixture, or in combination with barley water and a little sugar. Of course due precautions are taken to see that the milk is drawn in the first instance from healthy cows kept in stables of a proper standard of cleanliness.

The best possible evidence of the value of this work in saving life is to be found in the impression which it made on the infant death rate of New York last Summer. In presence of a long and exhausting period of very hot weather favorable to an increased mortality among the children of the poor, there was a decrease in the month of July, as compared with the corresponding month in 1893, of 7 per cent. in the deaths of children under one year, and of 11 per cent. in the deaths over one and under two years. For August the decrease of deaths in the one year class was 6 per cent., while in the two year class it reached as high as 34 per cent. Considering the well-known dangers attending the second year of child life, these figures bear very eloquent testimony to the possibility of greatly lowering the average of infant mortality. Taking the deaths in New York from diarrhoeal diseases alone, of which 89 per cent. are those of children under five years of age, and there is found to be a decrease of 454 in 1894, as compared with 1892. But, allowing for the increase of population, there should have been in ordinary circumstances 420 more deaths from this group of infantile complaints in 1894 than in 1892. This saving of 874 children's lives has been largely due to the institution of my sterilized milk depots. The application of similar methods have been

productive of satisfactory results in Philadelphia, Pittsburg, Cincinnati and Yonkers, and no phase of public hygiene is at present attracting so much attention in Europe. It is simply impossible for any man of ordinary feeling to study the simple appliances of a work like this, and to note their efficacy in fighting the forces of disease and death, without being prompted to engage in it himself

I am frequently asked for estimates derived from my own experience of the cost of placing sterilized milk at a nominal price within the reach of those who in a given community need it most. This is difficult to do for several reasons. I set out with the definite purpose of reducing the infantile death rate of the city, and all considerations of expense were held subordinate to that main object. In bringing the work to its present stage of development I have spent a good deal more money than I would were it to be done over again in the light of acquired experience. Then, the conditions of no two localities as to transportation, distribution and handling can be quite alike, and these figure largely in the element of cost. While, therefore, I may safely claim to be able to speak with authority as to the best processes of preparation, bottling, etc., I should hesitate to give an opinion as to the number of bottles that could be filled for a given expenditure. Some practical details will be found embodied in a little pamphlet which I am having printed and of which I shall send you a copy, but I know of no absolute standard by which the cost of such a work can be ascertained in advance.

The fact is that much good can be done by a very simple plant and by the most modest expenditure. A more or less elaborate equipment is, of course, necessary for doing the work on a large scale, but it is, perhaps, better that this should be a growth from tentative efforts confined within a limited area than that it should be adopted at the start. Any person of moderate intelligence can become thoroughly familiar with the methods and processes of my Sterilized Milk Laboratory in less than a week, and can readily apply the knowledge thus acquired to the duplication of its work on any scale that may be attempted. I shall be glad to give any such person, duly accredited to me by some responsible authority, free access to every department of my now completed system of preparation and distribution, and all possible data needed to guide him in adapting the work to different conditions. I know of no other way in which a satisfactory trial of its benefits can be secured than by such personal investigation and preparation as I have indicated. Should there be a desire to make such a trial in the municipality of which you are the head, I beg that you will consider all I am able to show of the practical working of the system entirely at the service of any one whom you may be pleased to designate. I am so deeply impressed with the benefit which work of this kind is fitted to confer on humanity, that my freedom in addressing you on the subject may be held not to require apology.

I have the honor to be

Nathan Straus

HOW TO REDUCE INFANT MORTALITY.*

To the Board of Health.

Gentlemen:

SOME eighteen months ago I took the liberty of addressing a letter to the Mayor of every city in the United States, setting forth at some length my conviction of the absolute necessity of making the supply of sterilized (pasteurized) milk for the children of the poor an object of municipal solicitude. I received sympathetic responses from so many quarters that I am encouraged to believe in the existence of a widespread interest in the subject. I feel it, therefore, to be my duty to supplement the appeal then made by a more complete and exact statement of the reasons which prompt me to believe that there is no field of public effort whose neglect admits of so little excuse. I address this communication to you as the agency of local government whose purpose it is to provide against all preventable loss of human life and to enable the people, from childhood to age, to live under sanitary conditions alike as to their food supply and their surroundings.

It is hardly necessary to call your attention to the fact that the most thorough system of public inspection of milk is almost solely directed to the correction of two abuses — skimming and adulteration with water — and to cutting off the supply of one kind of diseased milk — that drawn from tuberculous cows. The latter duty is usually performed by State officers; the former is an exclusively municipal function. The public inspection of milk in the United States is thus directed mainly to the prevention of fraud, and rarely, if ever, to the discovery of pollution. Except as to the stamping out of tuberculosis, considerations affecting the public health receive only incidental attention. As Prof. Sedgwick said some years ago in regard to Boston, "Public milk supplies may not be legally watered, but they may be stale, or polluted, or infected." May I be permitted to echo his query as to whether the time has not come when we should no longer be satisfied with chiefly preventing the cheating connected with the adulteration of milk or its dilution with water?

On the excellent authority of Dr. Shakespeare, of Philadelphia, the statement is made that nearly if not quite one-half of the deaths in the cities, towns and villages in this country are due to the class of diseases which are known to be preventable. He adds that the present annual mortality from the ordinary preventable diseases fails to impress the public mind, partly because it is so common, but mainly because of the customary and long continued inaction of the medical profession in matters relating to public sanitation. Chief among this preventable class of diseases are the diarrhoeal disturbances of young children, and the

*Letter sent to the Presidents of the Health Boards of American cities and Canada.

prime agent in the production of these is impure milk. These disturbances prevail among infants pretty much in the proportion in which such milk constitutes their food. They are related to a group of symptoms which medical science has declared to admit of no other satisfactory explanation than that they are of toxic origin, due to the absorption from the intestines of ptomaines produced by bacteria. The causative factor, in short, of these disturbances is bacteria, and these act in most cases by inducing changes in the food. It is nonsense to argue that because healthy adults may drink polluted and stale milk without injury, invalids and infants may do the same. Milk is babies' proper food, but the milk with which they are fed is too often a fluid in which the germs of disease and death have taken the place of Nature's most perfectly combined elements of nutrition. Samples of average city milk, perfectly good according to all the customary tests of color, taste, smell, and the galactometer, have been found to contain 2,350,000 bacteria to the cubic centimeter, or more than twice the amount of the bacterial contents of the same quantity of city sewage.

Thus a fluid possessing almost ideally perfect qualities for the preservation of health and nutrition may by easy and rapid stages of pollution become a deadly agent in the propagation of disease. Were the precautions taken to secure cleanliness in cow stables and in the clothing and persons of the milkers tenfold greater than they are, a wide mouthed pail held under the shaken udder would be necessarily a receptacle for many impurities. What actually takes place in almost uniform practice is that this rich animal fluid, sterile and presumably wholesome at the start, but drawn by unclean hands into half-cleaned pails, and meanwhile sprinkled from above by the dust of the stable, by hairs, dandruff, dirt, and particles of excrement from the skin and udder of the cow shaken by the milker or brushed by his hat, becomes infested with organisms. That these multiply swiftly and enormously in the warm and rich fluid, well aerated by the act of milking, is also a natural consequence of favorable conditions; and if we allow time, as has been well said, the wonder is not that it contains so many germs, but rather that it is still potable at all.

I hold, therefore, that there is practically no milk delivered for general consumption in cities that is fit to be fed in its natural state to young children. There is no system of tests capable of application that can alter this fact, and the tests in actual use do not touch it at all. If proof of this assertion were needed, a glance at the abnormal infant death rate of any of our great cities would amply bear it out. In New York City, the recorded births of the three years, 1890-'92, were 135,602. Allowing for the fact that only five-sixths of the whole are believed to be reported to the Board of Health, the actual number may be placed at 162,721. During the same period, the deaths of children under five years of age were 52,213, or over thirty-two per cent. of the whole number of births. That one child out of every three that were born should die before attaining the age of five, is in itself a most significant and alarming fact. The further fact that from fifteen to eighteen per cent. of all these deaths occurred in the five weeks between July 3d and August 6th indicates the true source of the trouble. In 1891 the number of infant deaths in these five weeks was 2,658; in 1892 it was 3,440, an increase of

782. Coming down to the specific causes, we find that diarrhoeal diseases accounted for nearly one-half of the whole. In the five weeks in question, the deaths of children under five from this cause were 1,209 in 1891, and 1,617 in 1892.

Here, then, was evidence of a steadily increasing infant mortality in the hottest season of the year, traceable to a cause usually associated with the poisons bred in cow's milk more abundantly at that season than at others. It was not a violent assumption that much of this mortality was preventable, and that the most direct and effectual method of prevention was to put milk suited for infant nutriment within reach of the poorest. After making a thorough examination of the subject, and taking counsel with physicians at home and with some who were accepted as authorities in Europe, I began to experiment in 1893 as to what could be done with one milk depot. I found medical testimony absolutely unanimous as to the requirement of perfect sterilization (pasteurization) for all milk intended for infant food in cities. A sterilizing laboratory was accordingly established, and the sale of pure milk, both in its natural and sterilized form, was begun in one of the most thickly populated districts of the city. The system of sterilization (pasteurization) adopted was that prescribed by Dr. Rowland G. Freeman, of New York, in which are combined the preservation of the nutritive qualities of the milk and the complete destruction of all noxious germs. The first year's experience showed me that the indirect results of my efforts were quite as valuable as those that could be directly traced to them. The standard of quality of the milk supply of the poor had been raised within the whole area adjoining my depot, the people being quick to discern the superiority of the pure article furnished at a low price over the more or less tainted, and also more costly, one they had been accustomed to use. During the hot term I also sold milk in its natural state at a cent a glass, in booths which I was permitted to erect in the public parks. The visiting physicians of the Board of Health and all physicians doing charitable work among the poor have been, from the beginning of my work, supplied by me with all the sterilized and modified forms of milk which they required free of expense.

It was found, as the result of the first year's experiment, that the use of sterilized milk was a matter of education. There was at first a suspicion of medication about it in the minds of the poor people for whose babies its use was most urgently needed, and the fact that the doctors began to recommend it tended to associate it in their own mind with drugs. This prejudice has, however, entirely disappeared. I had a special preparation for babies' food made according to a formula supplied by Dr. Freeman. To this I added another in the following year from a formula supplied by Dr. A. Jacobi, and both have been sold in my depots ever since in six ounce bottles at a cent apiece. In addition to these modified milk foods, barley flour has been sold. This is intended to meet a want, keenly felt by the poor, of wholesome nutrition at a price within their means for children beyond the infantile age. The milk is iced in transportation and kept on ice till it is turned into the bottles for sterilizing. It has been a rigidly observed rule that, without respect to demand, no bottle of sterilized (pasteurized) milk should be sold twenty-four hours after the process of sterilization. Experience

has taught my staff not a little as to the details to be observed in the effort to secure the most perfect results, but these are the main lines on which the business has been conducted.

In 1894, preparations were made to supply natural, pasteurized, and modified milk on such a scale and at as many different depots as might make a distinct impression on the milk supply in New York and so reduce the sum of its infant mortality. The character of the summer was well calculated to put the experiment to a severe test. The average temperature of the latter part of June, of the whole of July, and of part of August was unusually high, and much higher than that of the preceding year. For the first quarter of the year, the mortality of the children under five showed more than the proportionate increase which might be expected from the increase of population, which was about three per cent. per annum. There were 4,108 children's deaths in the first quarter of 1894, or ten per cent. increase. For the second quarter, the deaths in 1893 numbered 4,386, and in 1894, 4,483, and, as in the last half of the quarter my six milk depots were open, I was encouraged to believe that the arrested increase might in part be due to their influence. The mortality statistics for July and August confirmed me in this belief. For July, 1893, the deaths of children under five numbered 2,796, while for the same month of 1894 they were only 2,562. In August, 1893, they numbered 1,686, declining in the same month of 1894 to 1,559. Thus, instead of the increase of ten per cent. in the mortality of children with which the year had started, the two most fatal months of the year showed a decrease of 8.3 per cent. The deaths under five years for July and August, which, had they followed the rate of increase established in the first quarter of the year, would have numbered 4,930, were only 4,111. Here was an apparent saving of 819 lives in two months, or a decrease of the toll levied by death on the children of New York of sixteen out of every hundred.

In the experimental season of 1893, my one depot was open from June to November, and from it were sold 34,400 bottles either of pasteurized milk or of the modified mixture for infant feeding. In 1894 the six depots were opened on May 14th, and were kept open to the end of the hot term. From one of them the supply was at the disposal of the public till the end of the year. The service was thus made a continuous one, and has been so maintained since then, with six depots, in addition to the booths in the public parks, open during the hottest period of the year, and the central depot open all the year round. The sales for 1894, between May 14th and December 31st, aggregated 306,446 bottles of the pasteurized milk and its modifications. In 1895, between January 1st and December 31st, the sales were 589,064 bottles, and in 1896 the total for the year was 658,064 bottles. In the year before the work was seriously begun, 1893, the deaths of children under five during the two hottest months of the year were, as we have seen, 4,482; for the year just closed, 1896, they were 4,126. Meanwhile the population of the city had increased from 1,758,000 on July 1, 1893, to 1,934,077 on July 1, 1896. That is to say, there had been an increase of the population equal to fully ten per cent., and a decrease of children's deaths in the two most fatal months of the year equal to eight per cent. Had the deaths for July and August of 1896 been in the same proportion as those

for the same months of 1893, they would have numbered 4,930 instead of 4,126, a clear saving of 804 lives, or sixteen out of every hundred, in two months. As the rule in the past has been that this class of deaths increased more rapidly than the population, even these figures do not tell the entire story.

The experience of Brooklyn is, if possible, more significant of the value of the pasteurized milk food as a preventive of infant disease and death than that of New York. Ten years ago, Brooklyn had a decided advantage over New York in the possession of a much lower rate of infant mortality. This advantage became gradually less till it not only disappeared, but left New York, apparently, a more wholesome abode for children than its twin city across the East River. In 1894, the proportion of deaths of children under the age of five to the whole number of deaths was 42.6 per cent. in New York and 43.6 per cent. in Brooklyn. The disparity was not decreased in 1895, and with the opening of the summer of last year the Brooklyn Board of Health became still more impressed with the tendency of children's deaths in New York to show a decrease on those of previous years, while with them the tendency appeared to be the other way. In searching around for reasons to explain the lessened infant mortality of New York, they concluded that it was mainly due to the use of pasteurized milk nutriment. They accordingly applied to me for help and advice. As the most practical way of answering their appeal, I offered to supply them, free of charge, a thousand bottles a day of pasteurized milk and its modifications, leaving them to provide the machinery of distribution. In point of fact, in the thirty-eight days from July 29th to September 4th, in which they distributed these milk foods, they received, in all, 42,739 bottles from my New York laboratory.

The result is indicated in the report of the board for 1896, as follows: "The milk was distributed in the various stations of the Diet Dispensary, of which there are five in the city, and was supplied gratuitously to the poor on prescription, precedence being accorded to orders emanating from members of the summer corps, who used a special form. Although this work was not begun until the end of July, and was terminated on the 4th of September, upward of 40,000 bottles of pasteurized milk were dispensed, with the result, as indicated by statistics, of substantially reducing the death rate from infantile diarrhoea." In the same connection the following sentences from the report on vital statistics of Dr. George E. West, the secretary of the board, will be found suggestive: "The only notable increase of deaths during the present year, as compared with the previous one, was due to the intense heat of the first half of August, the deaths ascribed directly to this cause having reached the unprecedented number of 333, of which 215 were reported during the single week ending August 15th. In spite of the almost intolerable heat, the deaths from diarrhoeal diseases in infants diminished markedly in August, which fact is significant when it is remembered that the gratuitous distribution of sterilized milk was begun at the end of July."

From more detailed statistics furnished by Dr. West it appears that in the four weeks from June 30th to July 28th the deaths of infants under two years of age from diarrhoeal diseases had been at the average rate of 148 a week, rising in the third week of the month as high as 184

deaths. In spite of the "intolerable heat" of the first half of August, the number of infant deaths fell in the first week of the distribution of sterilized milk to 82, and in the next to 86, and in the five and a half weeks during which the distribution was kept up the weekly average of infant deaths was reduced to 73, or less than half what it was in the cooler and, for the last year at least, less fatal month of July. The results are no less remarkable when the deaths of children under two from diarrhoeal diseases are compared with the total number of deaths at all ages and from all causes. Beginning with the last week of June, these infant deaths accounted for twenty-two per cent. of the whole mortality of the city. They were twenty-three per cent. in the first week of July, twenty-eight per cent. in the second, twenty-seven per cent. in the third, and twenty-one per cent. in the fourth. The percentage fell to eighteen with the introduction of pasteurized milk in the first terrible two weeks of August, dropped still lower, to thirteen per cent., in the second two weeks of the month, and was eleven and twelve per cent. respectively in the last two weeks in which the milk was distributed.

These figures are more eloquent than any words of mine can make them. They show, I think, conclusively the very intimate connection between the supply of a pure milk diet and the arrest of the process of needless infant slaughter that is permitted to go on every summer in every populous community of the land. When a few cases of cholera find their way into one of our ports, there is a great outburst of public excitement, and money is lavishly spent to ward off the danger. Yet there is eminent authority for the statement that there are more deaths from the preventable diseases of children occurring each year in any city in this country than the total number of deaths caused by Asiatic cholera, in the same city, from the first visitation of Asiatic cholera to the last — that is to say, during a period of sixty-four years. Hundreds of thousands of dollars are readily spent to ward off a plague that happens to inspire people with terror; yet, here among the little ones is a most deadly form of disease, numbering its victims all the year round, but attaining in the summer months a degree of virulence unmatched by any epidemic, for the most effective remedy to which not a dollar is, so far as I know, appropriated by any city in the United States.

It is to draw attention to this anomaly, and to ask your co-operation in trying to remove it, that I have addressed this communication to you. The fact that the appeal is made on behalf of humanity must be my apology for troubling you with it. To the practical question of how much it would cost to place pasteurized milk and its modifications at a nominal price within the reach of those who in a given community need it most, it is difficult to give a satisfactory answer. I have merely to repeat what I said on this subject in a former communication to the mayor of your city. I set out with the definite purpose of reducing the infantile death rate of the city, and all considerations of expense were held subordinate to that main object. In bringing the work to its present state of development I have spent a good deal more money than I should were it to be done over again in the light of acquired experience. Then, the conditions of no two localities as to transportation, distribution and handling can be alike, and these figure largely in the element of cost. While, therefore, I may safely profess to be able to speak with authority as to the best processes of preparation, bottling, etc., I should

hesitate to give an opinion as to the number of bottles that could be filled for a given expenditure.

The fact is that much good can be done by a very simple plant and by the most modest expenditure. A more or less elaborate equipment is, of course, necessary for doing the work on a large scale, but it is, perhaps, better that this should be a growth from tentative efforts confined within a limited area than that it should be adopted at the start. Any person of moderate intelligence can become thoroughly familiar with the methods and processes of my sterilized milk laboratory in less than a week, and can readily apply the knowledge thus acquired to the duplication of its work on any scale that may be attempted. I shall be glad to give any such person, duly accredited to me by you, free access to every department of my now completed system of preparation and distribution, and all possible data needed to guide him in adapting the work to different conditions. I know of no other way in which a satisfactory trial of its benefits can be secured than by personal investigation and preparation. Should there be a desire to make such a trial under your auspices, I beg that you will consider all I am able to show of the practical working of the system entirely at the service of any one whom you may be pleased to designate.

I think I have shown that, as a means to the saving of human lives, there is no form of sanitary precaution comparable to the general use of pasteurized milk for infant food. As I am addressing a body of men who count every diminution of the death rate as the most convincing demonstration of their usefulness, it should need no argument to convince them that this is a legitimate field for them to occupy. It can hardly be a fact indifferent to any of us who have the common instincts of humanity that there should exist within reach of our efforts of prevention a vast aggregate of constantly recurring suffering and death. The tragedy of needless infant slaughter, desolating so many homes and wringing so many hearts, lies like a dark shadow on our boasted civilization. It is nothing more or less than permitted murder, for which the responsibility must lie at the door of the agencies of government that fail to recognize its existence and demand its prevention. The necessity is too great to be adequately met by private effort. Nothing short of an organization as broad as the area of milk consumption will meet the case, and this only public authority can supply.

I have the honor to be, yours respectfully,

Nathan Straus

The following letters may serve to support and illustrate the conclusions reached in the preceding communication:

FROM CHARLES G. WILSON, PRESIDENT OF NEW YORK CITY BOARD OF HEALTH,
JAN. 22, 1897:

Nathan Straus, Esq.:

Dear Sir—The distribution of sterilized milk to the poor through the depots established and maintained by you for that purpose undoubtedly contributed to the remarkably low death rate among children during the past summer. The Medical Inspectors of this Department are unanimous in their testimony to the usefulness of your charity to the preservation and promotion of the public health, and the Summer Corps of physicians distributed among the poor over

7,000 of your tickets, entitling them to a supply of sterilized milk upon presentation to your agents. The Board of Health greatly appreciates your charitable efforts in this direction for the comfort, relief and help of the sick and destitute, and hopes that you and others may continue this good work during the present and the following years.

FROM DR. ROWLAND G. FREEMAN, JUNE 7, 1895:

Nathan Straus, Esq.

My Dear Sir: It gives me pleasure to express to you my appreciation of the valuable services you have rendered this city by supplying to the infants and sick children of its poor, at a nominal charge, Pasteurized milk and modified Pasteurized Milk.

Before the existence of your milk depots, physicians practicing among the very poor could never be sure that their little patients who were not breast-fed were getting a clean and sterile food. Through your charity it is possible now to be sure that they have a sterile food, and moreover that they are taking it through a sterile nipple, since such a nipple is furnished with each bottle.

Your milk depots have undoubtedly saved many lives and a charity has been established by you on a large scale which may prove an example for philanthropists in other cities to follow.

FROM DR. Z. TAYLOR EMERY, HEALTH COMMISSIONER, BROOKLYN, JAN. 25, 1897:
Hon. Nathan Straus.

Dear Sir—I take pleasure in informing you that the experiment begun in this city in the summer of 1896 of supplying sterilized milk to the sick children of the poor has been markedly successful in lowering the death rate from diarrhoeal diseases in infants, and it is my intention to prosecute this good work with vigor during the coming year.

I trust you will succeed in having this experiment repeated in other cities.

FROM DR. ABRAHAM JACOBI, JUNE 5, 1895:

Mr. Nathan Straus,

Dear Sir: There is nothing so instructive as a success, and a single practical proof speaks louder than any number of volumes. By your sale of milk, of sterilized milk, and of two varieties of simple infant food—both of them based on scientific facts and proved by long observation to be reliable—you have benefited large numbers in New York City, and presented an example for greater imitation in other cities. It is true that it is impossible to statistically count the lives saved by your timely interference; it is easy, however, to make an estimate when one knows that the principal danger to health, and the great mortality of infants and small children are the *direct results of bad food, principally bad or spoiled milk*. Indeed, the dangers of the "second summer" mean nothing else but bad food and consequent digestive disorders.

I trust you will be able to extend the blessings conferred by you still further, not only over the city but outside also. I believe a call over your name will suffice to arouse the humanitarian interest of practical philanthropists in other large communities with the same salutary results obtained by you in New York.

FROM DR. CHAS. E. NAMMACK (RECEIVED THROUGH A FRIEND):

Dear Sir—Having practiced medicine among the crowded tenements of the East Side during the past fourteen years, and served as physician to the out-patients of hospitals during that period, I have abundant opportunity to test the practical efficiency of the various schemes for the amelioration of the condition of the poor. Of these plans, the one put in operation by Mr. Nathan Straus for providing sterilized milk for infants and children stands easily at the head. Noble in its conception, its execution has been generous, and the benefits derived therefrom immediate and striking.

In my opinion, and while not underrating the efforts of official and private charities, Mr. Straus's philanthropy has been the direct cause of reducing infant mortality during the recent hot season to a greater degree than that of all other factors combined.

THE INFLUENCE OF A PURE MILK SUPPLY ON THE DEATH RATE OF CHILDREN.

PAPER READ BEFORE THE NATIONAL CONFERENCE OF MAYORS AND
COUNCILMEN AT COLUMBUS, O., SEPTEMBER 29, 1897.

AMONG all the forms of waste in the world, there is none so reckless as that of human life. In every great city in this country, the lives of thousands of children are sacrificed every summer simply because they are fed with impure milk. The conditions of a wholesome milk supply are not very complex, but they are somewhat difficult of attainment. These conditions are healthy cows, clean stables, careful processes of milking, and prompt transfer of the milk in perfectly clean and close vessels from the cow to the consumer. In the milk supply of all great cities every one of the requisites is flagrantly violated. The inspection of cow stables to detect the presence of disease is neither careful nor constant; milking is done in most cases under conditions indescribably filthy, and most of the milk consumed by the children of the poor is at least thirty-six or forty-eight hours old before it reaches them.

I hold that there is practically no milk delivered for general consumption in cities that is fit to be fed in its natural state to young children. There is no system of tests, capable of general application, that can alter this fact, and the tests in actual use do not touch it at all. No plague by which a city was ever ravaged has yielded so plentiful a crop of deaths as that which is reaped every Summer from the seeds of contagion deposited in the infant system by millions of noxious bacteria developed in milk.

[Mr. Straus here gave statistics of infant mortality in New York City. See page 188.]

Taking counsel with physicians both at home and abroad, I began to experiment in 1893 with one milk depot. More than a thousand sick babies were fed on the pasteurized and modified milk. Most of the children were ill with cholera infantum and the benefit due to the improvement in their food was immediate and amazing.

The first year's experience showed me that the indirect results of my efforts were quite as valuable as those that could be directly traced to them. The standard of quality of the milk supply of the poor had been raised within the whole area adjoining my depot, the people being quick to discern the superiority of an article furnished at a low price over the more or less tainted and also more costly one they had been accustomed to use. During the hot term, I also sold milk in its natural state at a cent a glass, in booths which I was permitted to erect in the public parks. The visiting physicians of the Board of Health and all physicians doing charitable work among the poor have been, from the beginning of my work, supplied by me with all the pasteurized and modified forms of milk which they required, free of expense.

[Mr. Straus here gave results of his work in 1894. See page 190.]

The year 1895 was one of relatively high mortality in New York, the death rate being 23.11 per thousand, against 22.76 per thousand in 1894. But it is a striking fact that while the total increase in the number of deaths was 2,245, the increase in the deaths of children under five years of age was only 663. As these latter accounted for 41.9 per cent. of the total number of deaths, and for only 29.5 per cent. of the increase, the evidence seems conclusive that decided progress had been made in the saving of infant lives. In 1896, the death rate was 21.52 per thousand, the number of deaths decreasing over the previous year by 1,798. Of this decrease, 1,414, or over 78 per cent., were due to the reduced number of deaths of children under five years of age. During the three months of June, July and August, there was a decrease of 512 deaths of children under five, as compared with the previous year. Still more striking has been the decrease in the number of children's deaths in 1897. While for the eight months ending in August the deaths under five were 12,734 for 1896, and 13,287 for 1895, they were only 10,962 for the present year. For June, July and August, the deaths under five years of age numbered 5,401 this year, against 6,183 in 1895, a decrease of 782 or about 12 per cent. The comparatively cool summer has had, of course, something to do with this sudden fall in the infant death rate, and the improved sanitary conditions of the city must be accorded their fair share of credit. But, as every physician knows, neither a slight fall in the average summer temperature nor cleaner streets and better regulated tenements will greatly abate the prevalence of infant diarrhoea, if the feeding bottles contain the germs of disease.

In point of fact, the decrease in the mortality of children in New York, which has reached so satisfactory a stage this year, is merely part of a continuous improvement which began in 1893, and which I believe I am right in identifying with the placing of pasteurized milk food within the reach of the children of the poor (see statistics, page 90).

Making the comparison between the first seven months of 1897 and the corresponding seven months of the five previous years brings out the progress of this improvement still more strongly.

DEATHS AND DEATH RATES OF CHILDREN UNDER FIVE YEARS OF AGE, FROM JANUARY TO JULY, INCLUSIVE, 1892-97.

Year	1892	1893	1894	1895	1896	1897
Deaths	12,877	11,290	11,553	11,347	10,902	9,447
Death Rate per thousand per annum..	113.4	96.6	96.0	90.8	84.8	71.4

A similar comparison of the deaths and death rates of children under one year of age, of which the estimated population is equal to 2.8 per cent of the total population of the city, shows with equal clearness the continuous reduction in the rate of infant mortality, and demonstrates even more convincingly the degree to which it is possible to arrest the culpable and heedless sacrifice of infant life.

DEATHS AND DEATH RATES OF CHILDREN UNDER ONE YEAR OF AGE, FROM JANUARY TO JULY, INCLUSIVE, 1892-97.

Year	1892	1893	1894	1895	1896	1897
Deaths	7,464	7,003	6,848	6,999	6,661	6,077
Death Rate per thousand per annum	266.9	243.3	231.1	227.5	210.4	186.4

Confining the comparison to deaths from diarrhoeal diseases during the two most fatal months of the year, July and August, we find the following state of facts. For the three years 1890-92 the total number of deaths from diarrhoeal diseases during the months of July and August was 6,122; for the three years 1894-96 the total number during the same two months was 5,262, showing a saving of 860 deaths in presence of an increase of average population from 1,700,000 to 1,970,000.

[Here Mr. Straus told of his experience in Brooklyn. See pages 191-2.]

The following letter sufficiently describes the experience of Brooklyn with the distribution of pasteurized milk food during the present year. The work was done entirely under the supervision of the Board of Health, the money to purchase the raw milk having been furnished by private subscription, and the plant and steam for pasteurization being provided in premises owned by the city.

**DEPARTMENT OF HEALTH
COMMISSIONER'S OFFICE**

Brooklyn, N. Y., September 20, 1897.

Hon. Nathan Straus.

Dear Sir:—In reply to your request for statistics demonstrating the utility of pasteurized milk for the purpose of diminishing deaths from diarrhoeal diseases, I take pleasure in supplying you with the following table, which, it seems to me, is quite eloquent:

**DEATHS FROM DIARRHOEAL DISEASES, CHILDREN UNDER TWO
YEARS OF AGE, FOR 38 WEEKS.**

Year.	Population.	Deaths.	Rate Per 100,000.
1890	854,000	1,331	156
1891	890,000	1,320	148
1892	928,000	1,512	163
1893	973,000	1,492	153
1894	1,045,000	1,382	132
1895	1,100,000	1,507	137
1896	1,125,000	1,338	119
1897	1,160,000	1,170	101

As the use of pasteurized milk is confined principally to infants under two years of age, I have used the number of deaths from diarrhoeal diseases of those infants as a basis of comparison. Further, as only thirty-eight weeks of the present year have expired, I have confined myself for purpose of comparison to the first thirty-eight weeks of each of the other years, which period practically covers the season during which diarrhoeal diseases occur in large numbers. The last column of my table is obtained by dividing the number of deaths from diarrhoeal diseases of children under two years, as shown in the third column, by the estimated population of the city for the corresponding year, which I consider the fairest basis of comparison possible.

The experiment of using pasteurized milk was begun in this city about the middle of the summer of 1896, and was followed up during the present summer more vigorously and commenced at an earlier date.

Trusting that you will find the table of service to you, I remain,

Yours respectfully,

GEO. E. WEST, M. D.,
Secretary.

I have always maintained that from the work in which I have been engaged the most satisfactory results at the lowest average cost could be secured in a city of moderate size. This conclusion is amply borne

out by the testimony of Dr. S. E. Getty in regard to the effect on infant mortality of pasteurized milk distribution in Yonkers. This is a city having a population of 38,000, situated just across the northern boundary of New York. It has a large tenement population composed of people of many nationalities — Hungarians, Irish, Russian Jews and Italians — all ignorant of the first rudiments of the proper care and feeding of infants. Here the work of preparing and dispensing pasteurized milk foods was begun, on the lines previously laid down in my New York dispensary, at St. John's Riverside Hospital in July, 1894. The first season's work was mainly experimental, and according to the testimony of Dr. Getty the milk furnished by local dairymen both in 1894 and 1895 left a good deal to be desired. Those in charge of the work realized the necessity of controlling a dairy where every effort would be made to produce pure milk, drawn from healthy and properly fed and groomed cows. So much of the success of the work depending upon a pure milk being obtained at the source of the supply, it was decided before the opening of the season of 1896 to obtain entire control of a dairy. As a sample of the precautions which a medical expert regards as essential to a perfect milk service for children, the following statement of Dr. Getty is worth quoting:

"The cows selected were a cross between Holsteins and natives, and Guernseys and natives, and they were all given the tuberculin test and found to be free from tuberculosis. The stables were critically examined in regard to light, air-space and drainage, and found to be models of their kind, and were kept in a perfectly hygienic manner. The water used by the cows for drinking purposes, also that used for washing the milk pails and cans, was analyzed and proved satisfactory. The pastures were gone over carefully to detect noxious weeds. The greatest care was taken at milking time to keep the milk free from dust and dirt; before each milking the cows were groomed and the udders thoroughly wiped, and after this duty was performed the milkers washed their hands and put on their milking suits. After being drawn, the milk was rapidly cooled, and all care taken to keep it cool and free from contamination until ready for shipment. Only the afternoon's milk was sent to us. The one thing feared was the railroad journey at night of one hour in the refrigerator car, but no ill effects were discovered from it. The train was met on its arrival by the dispensary wagon and, after a short drive, the milk was immediately transferred to a refrigerator. Pasteurization began at 5 A. M. and at that time the milk was thirteen hours old."

In the four Summer months of 1895, 64,000 six and eight-ounce bottles were dispensed in Yonkers, and in the season of 1896 the number was increased to 78,300 bottles. Owing to the limited size of the town the effects could be closely observed and the individual cases carefully studied. A study of the vital statistics of the city reveals the fact that the average number of deaths of children under five in the months of June, July, August and September in the years 1892, 1893, 1894 and 1895 was 162. In the same period in 1896 the number was 135, a decrease of 27 deaths, or seventeen per cent. The average number of deaths for the four years from digestive troubles was 91, while in 1896 the number was only 48, a decrease of 43 deaths, or forty-seven per cent. The increase of population in Yonkers from 1880 to 1890 was seventy per cent.,

and there is every reason to believe that the same ratio has been maintained since 1890. The other causes of death among children show an increase of thirty-seven per cent. and the number of deaths among persons over five years of age shows an increase of twenty-two per cent. These increased percentages would represent about the increase of population in five years, so that not only is there apparently traceable to the use of pasteurized milk foods an arrest of the ordinary increase of mortality among children, but there has been established a positive decrease in face of a rapidly growing population. Confining the comparison to digestive troubles alone, there has manifestly been a saving of forty-three lives in the short space of three months in a town of less than 40,000 people. It is the testimony of Dr. Getty that there has been no material change in either the hygienic condition or the milk supply of Yonkers during the summer of 1896 as compared with previous summers.

By way of bringing out more clearly the significance of the reduced death rate in Yonkers, the statistics of the neighboring cities of Hoboken, Long Island City, and Newburgh have been tabulated by Dr. Getty. The following is a summary of the tabulation:

1 — Hoboken. The average number of deaths among children under five for the four summer months of the years 1892, 1893, 1894 and 1895, was 289. In the same period in 1896 the number reached 352, an increase of twenty-two per cent. The number of children dying from digestive troubles averaged 104; in 1896 the number was 110, an increase of 5.8 per cent.

2 — Long Island City for the same period shows an average of 225 deaths among children under five; in 1896 the number was 257, an increase of 32, or fourteen per cent. The deaths from digestive troubles averaged 90, while in 1896 they reached 115, an increase of 28 per cent.

3 — Newburgh for the same period shows an average of 75 deaths among children under five; in 1896 the number was 72, a decrease of four per cent. The deaths from digestive troubles averaged 30; in 1896 they numbered 43, an increase of forty-three per cent. It should be noticed that Newburgh has 12,000 less of population than Yonkers, and that the milk supply is excellent, as it is the largest town in a noted dairy county, and the milk is brought in fresh twice a day in farmers' wagons.

In these three cities the average number of deaths among children was 589 from 1892 to 1895, while in 1896 the number was 681, an increase of 92 deaths, or fifteen per cent. The deaths from digestive troubles averaged 224; in 1896 the number reached was 268, an increase of 44 deaths or twenty per cent. This increase of twenty per cent. is about equivalent to the normal increase due to the growth of the cities; while in Yonkers, with a rapidly expanding population, there is a decrease of seventeen per cent. in deaths among children, and a decrease of forty-seven per cent. from digestive troubles, more than offsetting the increased percentage of other causes of death under five years of age. As Dr. Getty puts it, "there is no need for further argument — these figures speak for themselves."

I think I have fairly demonstrated the proposition that many thousands of infant lives are annually sacrificed by the neglect to supply for the nutriment of children milk which has been subjected to the process of pasteurization. I hold that neglect to be criminal, and I leave it to

you to fix the responsibility for it. We punish murder with the penalty of death, and yet we allow murder to be committed by the wholesale in every populous community of this land, with no thought of its punishment, and little thought of its prevention. I have advocated these ideas for years, though I am free to say that I have found nowhere less attention paid to them on the part of public authorities than in the City of New York, where I have done most to prove the sincerity of my belief in them. There is no reform which has not to encounter obstacles, sometimes from the ignorance or indifference of the people for whose benefit it is intended, and sometimes from the narrow selfishness of those who regard it as an interference with their opportunities for making money. But the most exasperating of all forms of opposition to public well-doing is that which comes from those who pervert the trust of public office to the satisfaction of a personal grudge, or the pursuit of a temporary partisan advantage. I have had enough experience of this in New York to force me to the conclusion that the man who sets himself to the task of doing good must be schooled into indifference against the shafts of obloquy and misrepresentation.

The work which I have outlined is legitimately public work, and to do it on a scale fully commensurate with the wants of a community like that of New York transcends the ability of any one individual who has not very great wealth at his disposal. I may add that no organization sustained by combined individual liberality could do it so well as that branch of the municipal government which is charged with the care of the city's health. The fact that some sinister caprice has moved the New York Board of Health to attempt to embarrass and discredit my work does not alter the fact that it is to them that the duty of taking up and carrying out this work belongs. A similar obligation rests on every municipal Board of Health in the country, and I am happy to say that all of them with which I have communicated, outside of New York, frankly recognize this fact. I regard it as more than sufficient reward for all the trouble which this work has brought me that it has not only been instrumental in saving many lives but has directed widespread attention to a necessity which has been too long neglected, and has commanded that most sincere of all forms of praise — imitation.

I appeal to you gentlemen who are charged with the responsibilities attending the government of cities, great or small, to study the conditions under which this work is done, and carefully note the results which attend the doing of it. I appeal to you as if you were standing beside a great river in whose current were constantly swept past hundreds of drowning infants. This stream is a very real thing if people would but recognize its existence, and all its yearly tribute of death is paid because of the public neglect of some of the simplest precautions for the saving of children's lives. You, gentlemen, have the means under your control by which these drowning babies can be saved. I ask you, Will you not apply them? Men are found capable of acts of heroism in presence of danger less threatening and less surely fatal. All that I plead for is the extension of the activity of local boards of health into a sphere which is legitimately theirs, but which they have, so far, lacked the conviction and the courage to occupy. I shall not have spoken in vain if I have succeeded in impressing you with the fact that the dictates of humanity and of public duty combine in demanding that this backwardness should exist no longer.

WHY DISTRIBUTION OF PASTEURIZED (STERILIZED) MILK SHOULD BE A FUNCTION OF EVERY MUNICIPALITY.

By **NATHAN STRAUS.**

New York, November 15, 1900.

OUR schools and universities are the finest in the world. We spend millions of dollars annually to prevent intellectual incapacity. Why not treat physical ailments in the same manner?

Prevent them.

Prevent helpless infants developing from a puny, sickly childhood into a diseased, weakened and helpless manhood and womanhood, and save, in so far as possible (and a great deal is possible), the enormous sum paid annually for the maintenance of hospitals and like institutions.

Since it is one of the functions of our government to provide means of curing disease, why is it not within its province to furnish the agents of its prevention?

Milk is the one article of food in which disease and death may lurk without giving any suspicion from its taste, smell or appearance.

If the Pasteurizing of the entire milk supply were made the function of the municipality, it would be an exceedingly clever business investment, for the money expended would be returned a hundred fold. This is looking at it from a practical, commercial standpoint, besides which, from a humanitarian point of view, the amount of suffering and disease which would be prevented is incalculable.

"It is estimated that one-third of the children die before they are three years old, and one of the leading causes of infant mortality is impure milk."

"Numerous outbreaks of typhoid fever have been reported where there was no doubt about the milk supply being the carrier of the germs. Outbreaks of diphtheria have been traced to milk from farms where diphtheria has been known to exist in the families of the attendants. The same is reported of scarlet fever and cholera. Pasteurization or sterilization of milk is the only safeguard against such dangerous diseases, as this process destroys all the disease germs."

U. S. DEPARTMENT OF AGRICULTURE.

Thousands of infants' lives are needlessly sacrificed annually by impure milk. No system of milk test or examination now in operation or capable of being generally applied is sufficient to protect the lives of young children against the noxious germs present in a large portion of the milk delivered in its natural state in cities.

Dr. Shakespeare, of Philadelphia, an eminent authority, states that nearly, if not quite, one-half the deaths in cities in this country are due to that class of diseases which are known to be preventable. Chief among these preventable diseases are the diarrhoeal disturbances of young children, and the prime agent in the production of these is impure milk.

This state of affairs was brought to my attention in 1892. After making a thorough examination of the subject and taking counsel with physicians at home and some who were accepted as authorities in Europe, I began to experiment as to what could be done to bring absolutely pure milk, and milk fitted for infant consumption, within the reach of those who needed it, particularly the poor. I found medical

testimony absolutely unanimous as to the requirement of perfect sterilization (Pasteurization) for all milk intended for food in cities. I accordingly established a sterilizing laboratory, and began the dispensing of pure milk, both in its natural and sterilized form, from one booth in one of the most thickly populated districts of this City. The system of sterilization adopted was that of Dr. Rowland G. Freeman, of New York. This system combines the preservation of the nutritive qualities of the milk and the complete destruction of all noxious germs.

This work was begun in 1892, when 34,400 bottles were distributed, and each succeeding year enlarged and widened in scope, until the present year, up to date, 596,677 bottles have been dispensed and 812,921 glasses of milk drunk on the premises. Its results can be more eloquently told by the statistics of the Health Department than by any words in my vocabulary (see page 90).

Statistics of the deaths and death rate for the three hottest months of the year, June, July and August, when the peril to child life is greatest, and, consequently, the distribution of sterilized milk the largest, demonstrate more convincingly to what degree the culpable sacrifice of infant life may be arrested (see page 90).

The rate of infant mortality is here shown to have continuously decreased since the establishment of the Pasteurized (sterilized) milk booths from 135.2, in 1892, to 76.9, in the present year. These cold figures are fluent and powerful evidence of the beneficence of this work of placing Pasteurized (sterilized) milk within the reach of every poor family in Manhattan, and of its efficacy in routing the forces of disease and death.

Confining the comparison to deaths from diarrhoeal diseases during the two most fatal months of the year, July and August, we find the following state of affairs: For the three years 1890-1892 the total number of deaths from diarrhoeal diseases during the months of July and August was 6,122; for the three years 1894-1896 the total number during the same two months was 5,262, showing a saving of 860 deaths in the presence of an increase of average population from 1,700,000 to 1,970,000; for the three years 1897-1899 the total number during the same two months was 4,050, showing a still further saving of 1,212, with a still greater population.

As a mere hint of what might be accomplished by municipal ownership and municipal operation of plants for the Pasteurization of the milk supply of cities, the results of the establishment of a plant in the Infant Asylum at Randall's Island, New York City, may be quoted (see p. 204).

What may we call this heedless, needless, sacrifice of infant life? In the face of these facts, is it too strong to call it MURDER, PERMITTED MURDER? When the news of a railroad wreck and accompanying loss of life is telegraphed across the continent, it is followed by a shudder of horror, and if any life-saving precautions have been lacking there is raised a cry of vengeance against the "soulless" corporation, whose duty it is to provide every safeguard for life. But what of the thousands of infants whose lives pay the penalty of lack of precaution? No shudder of horror passes over the land; no cry for reform is raised, yet just as surely as the proper precaution would have prevented that railroad catastrophe, just so surely would the lives of the thousands of these helpless infants be saved did our municipal authorities adopt the preventive measures here shown to be effective.

INFANTS' MILK DEPOTS.

PAPER OF NATHAN STRAUS, OF NEW YORK, READ BEFORE THE
BRITISH MEDICAL ASSOCIATION AT ITS ANNUAL MEETING,
JULY 24th TO 28th, 1905, AT LEICESTER, ENGLAND.

THE conditions of a wholesome milk supply, though sufficiently simple, are extremely difficult of attainment. These conditions are: healthy cows, clean stables, careful processes of milking, and prompt transfer of the milk in perfectly clean and close vessels from the cows to the consumer. When I first became interested in this subject, thirteen years ago, I found all of these requisites flagrantly violated in the milk supply of the great cities of this country.

It appeared to me, as it had to previous investigators in this field, that the time had come when we should be no longer satisfied with merely preventing the cheating connected with lowering the nutritive quality of milk, and that some systematic effort should be made to restrain its influence in the propagation of disease. It needed no expert knowledge to recognize the fact that polluted or stale milk carried with it the seeds of disease and death. While we have in pure, sound milk nature's most perfectly combined elements of nutrition, I found that there was practically no milk delivered for general consumption in American cities that was fit to be used in its natural state. It needed but little reflection to be impressed with the fact that no plague by which a city was ever ravaged had yielded so plentiful a crop of deaths as that which is reaped every year from the seeds of contagion deposited in the infant system by millions of noxious bacteria developed in milk.

[Here Mr. Straus gave statistics of infant mortality in New York City (see pages 188-189), told of the results of his work in 1894 (see page 190) and in 1895 (see page 196), and cited the statistics showing the reduction of the death rate year by year from 1891 to 1904 (see page 90).]

Assuming, as I think I have some right to do, that the steady decrease above indicated in the infant mortality of New York during the last eleven years has been closely related to the work of my milk depots, it is instructive to note that, while in 1893, the year before my service was on a sufficiently large scale to be a recognizable element in the milk supply of New York, the death rate of children under five was 89.3 per thousand, it had been reduced by 1897 to 69.6 per thousand. The reduction continued somewhat irregularly since that year and reached its lowest figure in 1903, when the rate fell to 55.1 per thousand. But perhaps the most impressive demonstration of the saving of infant lives which has been effected in New York since the beginning of my work is to be found in the fact that while the average mortality among children under five for the quinquennial period 1891-5 was 90.6 per thousand per annum, the rate for the five years 1900-4 was 61.2 per thousand — a reduction of 32.4 per cent. or, to put the case in another way, the increase in the infant population of the city, on the average of the two periods compared, was $22\frac{1}{2}$ per cent., but while the annual average of deaths in this population in the five years 1891-5 was 18,110, it was only

15,070 in the five years 1900-4. Obviously had the ratio of deaths to population in the first quinquennial period represented the mortality of the last one, we should have had an average of 22,293 infant deaths per annum, so that the saving of infant lives effected in the ten years during which my infant's milk depots have been fully equipped and organized is not less than 7,223 per annum. By pushing the comparison back to a period antedating any effort to improve the milk supply of New York, a still more striking saving of life could be shown. There has, of course, been a continuous improvement in the sanitary conditions of the city during the period under review, but I think I am right in the assumption that these are insufficient to account for the results I have summarized in the absence of any successful effort to place Pasteurized milk food within reach of the children of the poor.

This assumption becomes invested with the certainty of a demonstration when the following table is examined of the infant deaths and death rate for the three hottest months of the year, June, July and August, when the peril to child life is greatest and the distribution of Pasteurized milk has been on the largest scale (see page 90).

It will be perceived that in the year before I began the systematic prosecution of my work, the infant death rate for the summer quarter reached the appalling figure of 135.2 per thousand of the population under five years of age. Last year the ratio was reduced to 75.1 per thousand. In other words, had the infant mortality of the same quarter of 1892 been reproduced, relatively to the population, in 1904, the number of deaths would have been 8,725, instead of 4,805. I do not think it is a hasty induction from the facts to claim that the most important element in the saving of these 3,920 infant lives has been the improvement of the character of the milk food supplied to the children of the New York poor.

An interesting and very convincing illustration, on a small scale, of the good results attending the Pasteurization of milk food for children is furnished by the history of the establishment of a plant in the Infant Asylum at Randall's Island, New York.

In 1897 the death rate amongst the waifs picked up in the streets of New York and taken to the hospital of this institution was 44.36 per cent., a rate so high as to become a matter of grave concern to those in charge. I asked permission to supply the Asylum with all the Pasteurized milk they required. This offer was declined and the appalling death rate continued. Finally, in 1898, I secured permission from President John W. Keller, of the Department of Charities, to install in this Asylum a complete plant for the Pasteurization of milk foods. For the three years preceding this installation, the ratio of deaths to the number of children under treatment was as follows:

1895	Children treated:	1,216
	Deaths:	511
	42.02 per cent.	
1896	Children treated:	1,212
	Deaths:	474
	39.11 per cent.	
1897	Children treated:	1,181
	Deaths:	524
	44.36 per cent.	

The Pasteurizing plant was installed in the early part of 1898, and the death rate immediately dropped as follows:

1898	Children treated:	1,284
	Deaths:	255
	19.80 per cent.	
1899	Children treated:	1,097
	Deaths:	269
	24.52 per cent.	
1900	Children treated:	1,084
	Deaths:	300
	27.68 per cent.	
1901	Children treated:	1,028
	Deaths:	186
	18.09 per cent.	
1902	Children treated:	820
	Deaths:	181
	22.07 per cent.	
1903	Children treated:	542
	Deaths:	101
	18.63 per cent.	
1904	Children treated:	345
	Deaths:	57
	16.52 per cent.	

In short, had the same ratio of deaths to the number of children treated been maintained in this institution during the last seven years which was established during the preceding three years, the number of deaths would have been 2,604 instead of 1,349. It would be difficult to find a more impressive demonstration of the value of the use of Pasteurized food in the feeding of infants. The demonstration was all the more striking because no other change whatever had been made in respect to either diet or hygiene in the management of the institution.

If it be conceded that the direct and indirect influence of my milk depots has had a perceptible influence in lowering the annual infant mortality of New York, it must follow that the work of these depots so extended as to include practically the whole milk supply of the infant population of the city would make a much more decided impression on the death rate. An organization so comprehensive as this would require belongs to the sphere of municipal rather than of private effort. I am at present engaged in the building and equipment of a new laboratory, with a Pasteurizing plant of much larger capacity than that which I now employ.

As there is a fractional loss on every bottle of milk sold, taking no account of the thousands distributed to families who are unable to pay for them, it is obvious that the work in which I am engaged must, at the present rate of expansion, shortly transcend the bounds of private effort. No better proof of its utility could be given than the remarkable elasticity of the demand now fairly established for my milk foods. The tenement house population of New York have learned their value in the saving of children's lives, and I contemplate with dismay the time when any

organization which I am able to provide will be inadequate to supply the demand for them. I can only trust that before that time arrives the city itself may be prepared to accept the obligation, which no other agency can so well discharge, of making the supply of a wholesome milk food for infants a municipal function, and so stamping out the seeds of a plague more destructive than any that is to be dreaded under the conditions of our modern civilization.

PURE MILK SUPPLY A MUNICIPAL DUTY.

STATEMENT BY MR. NATHAN STRAUS, DECEMBER 5, 1905.

I HAVE done as much as one man could to promote the use of pasteurized milk everywhere, but all that I have accomplished is merely a fraction of the good that could be done were the supply of pure milk made a municipal function as much as the supply of pure water.

There can be no question but that the entire milk supply everywhere ought to be pasteurized, not only that intended for infants, since the use of raw milk for adults is almost equally fraught with danger. The most deadly of diseases, correctly described as the "white plague," could be rooted out by such a simple precaution as pasteurizing all the milk. Does it seem possible that anyone should ever use it in its raw state?

At the International Tuberculosis Congress, held in Paris about a month ago, it was declared that the transmission of bovine tuberculosis to the human system had been fully established, and the universal acceptance of that fact by the medical world was one of the most valuable results of that congress.

It is part of the duty which the State and national government owe to their citizens to do all they can to prevent sickness. When you think of the vast sums that are spent every year for the construction and equipment of engines for the destruction of life, don't you wonder that it should be so hard to get either money or legislation for the saving of life?

I am not criticizing the policy that calls for more battleships or for any other means of national defense. But if we are to spend millions to protect us against foes from without, cannot we spend the small sum required to protect us against more deadly foes in the shape of the causes of disease and death that we have always with us?

When pestilence in the shape of yellow fever or cholera makes its appearance among us we spend money like water to stop its ravages, but every year, and all the time, tainted milk claims more victims, from childhood to old age, than all epidemics.

If the dictates of humanity do not compel state and local governments to take steps to stop this, there are sound economic reasons why they should. We are surely not prepared to admit that we regard human life as the cheapest of all commodities, or that we grudge the expense needed to save children from death.

STRIKING AT THE CAUSE OF TUBERCULOSIS.

BY NATHAN STRAUS.

Statement Issued in October, 1906.

WHEN American cities take the proper steps to compel the pasteurization of all milk used within their confines, the greatest victory in the battle against "The White Plague" will have been won. It is a dictum of medical and chemical science that while the properties of milk are of such a character as to endow it, on one hand, with almost ideally perfect qualities for the preservation of health and for nutriment, it may, on the other hand, become a terrific energy for the propagation of disease.

Milk is one of the most perfect "culture fluids," and the bacteria which get into it from external sources, after it is drawn, increase with almost miraculous rapidity. But it is not only from external sources that milk may be polluted. It may be drawn from cows already infected with the germs of tuberculosis.

Since no thoroughly efficient means of discovering the existence of this disease in milch cows has yet been provided by law, and since the thorough inspection of all the cows which contribute to the milk supply of a great city is next to impossible, the only path of safety in the use of natural milk is to see that the noxious microbes which it contains are killed. The process known as commercial pasteurization does not accomplish this, and the only way to have it satisfactorily performed is to expose the milk for twenty minutes to a temperature of 167° Fahrenheit.

This is not literally a precept of boiling. But it is *better to boil the milk than to take it in its natural state.*

The duty of pasteurizing or boiling all milk for consumption is an imperative one, and one that has been too long shirked.

We spend millions of dollars for our hospitals to cure disease, and we spend millions of dollars for our schools to educate the people. Why not devote a few millions to eliminating conditions which help so largely to fill our hospitals, and which, in so many cases, bring to an untimely end the lives of the graduates of our schools before they can take advantage of the benefits which they have received?

It is against the law in New York, and in most cities, to sell milk adulterated with water, even though the water may be pure. But while public milk supplies may not legally be watered, they may be stale or polluted or infected. That is to say, milk may be sold without detection bearing innumerable microbes fitted to breed tuberculosis, typhoid and scarlet fever. Whether through inefficiency, or lack of power, the health authorities of New York City do but little to furnish an effective check to the greatest known cause of infant mortality. This, too, in spite of the fact that the conditions are well known to them through reports and other information which I know have been brought to their attention.

The State law for the discovery and extirpation of cattle infected

59.1 per thousand. Even more eloquent are the returns of the death rate of children under five years of age during the months of June, July and August. For the two metropolitan boroughs above named the rate was 135.2 per thousand in 1892, and it was only 66.7 per thousand in 1906.

My milk depots were established in the thickly congested sections of the then City of New York, but the standard of quality of the milk supply of the poor was raised throughout the entire area. The people were quick to discern the superiority of an article furnished at a low price over the more or less tainted, and also the more costly, article they had been accustomed to use.

In addition to selling the milk below cost to the poor, the visiting physicians of the Board of Health and all physicians doing charity work among the poor, have from the beginning of my enterprise been freely supplied with all pasteurized and modified forms of milk which they required in their practice. It has also been a rigid rule with me that no pasteurized milk should be sold later than twenty-four hours after its pasteurization. The milk is distributed in round bottom bottles so that they cannot be left uncorked and the milk exposed to contamination.

In the first year of my depots, 1893, a total of 34,400 bottles of pasteurized milk was dispensed. In 1906, a total of 3,140,252 bottles was dispensed and 1,078,405 glasses of pasteurized milk were drunk on the premises.

If it be conceded that the direct or indirect influence of my depots has had a perceptible influence in lowering the annual infant mortality of New York, it must follow that the work of these depots, if extended so as to include practically the whole milk supply of the infant population of the State, would make an even more decided impression on the death rate. The limit of the capacity of my present establishment is being rapidly reached, and, to be at all adequate to the demands made upon it, must very shortly reach a point where it belongs to the sphere of municipal rather than private effort.

Then, too, there is a loss on every bottle of milk sold, taking no account of thousands of bottles distributed to families unable to pay for them. In the budget of a government this cost would be but a small item, but when it is merely a question of individual effort and private means, it may readily be conceived that the cumulative increase of such a business may create a burden too heavy to be borne.

As I have already intimated, the value of my work has been very largely educational. The area of my efforts has been necessarily a restricted one, and their indirect results must be held to be of more value than the results directly traceable to them. It is something to have been largely instrumental in awakening public intelligence throughout the country to the dangers latent in an unregulated milk supply. It is something to have been able to concentrate public attention in this City and State on the necessity for pasteurizing the entire milk supply. The fight is not yet won, by any means, and it has been a fairly arduous one from the start. The fact that I have lived to see a total change in the point of view, alike of men of science and the public generally, in regard to this whole question, encourages me to believe that the final steps of legal precaution will be neither halting nor long-deferred.

PURE MILK OR POISON?

REMARKS BY MR. NATHAN STRAUS.

Addressed to the Milk Conference held at the New York Academy of Medicine,
November 20, 1906.

MOST of you gentlemen are professional men and your time here is limited, and I am not going to waste it by talking to you about things you know already. I have, however, prepared a little statement which I will hand to you and you can read it at your leisure. What I am anxious to accomplish at this meeting is to get your co-operation in securing legislation that shall deal in a more practical way than we have yet been able to do with this question of pure milk. It must be obvious to you that the resources now at the command of the State Board of Health, or any other Department that may be invested with the required powers, are entirely inadequate to the purpose of stamping out tuberculosis among cows.

It must be equally plain that were these resources amply sufficient for the requirements of our own State, they would have to be provided and applied by the neighboring States which contribute so largely to the milk supply of this city.

Then, as to Federal supervision, milk demands, as an article of interstate commerce, a kind of inspection which even the sweeping requirements of the Pure Food Bill do not provide.

All this will doubtless be accomplished in time, but until that time does arrive, it seems to me that the City or the State should provide pasteurization for the entire milk supply, without any cost to the producer or the consumer. With the co-operation of you gentlemen, this can be done.

I HAVE TRIED PASTEURIZATION, TRIED IT PRACTICALLY, AND UNTIL YOU CAN SHOW ME SOMETHING BETTER I MAY BE PARDONED FOR BELIEVING THAT PASTEURIZATION IS THE THING.

Then let us arrive at some definite conclusion, and let us do it with all the more resolution because whatever we do here in New York will be copied in every City and State of the Union.

I ought to know something about milk. I have been working at the practical end of it for a good many years now. At the outset, I addressed a public who had hardly begun to realize the waste of human life due to the use of milk carrying with it the germs of disease.

Had I been a man of scientific attainments, so that my statements would carry the weight of scientific authority, I should probably have accomplished more than I have done. But I have at least had the satisfaction of contributing to a great awakening of public interest in this vitally important question.

Partly, at least, because of my own efforts, I have seen State and Municipal Boards of Health address themselves seriously to the primary requirements of a pure milk supply. I have even had the satisfaction of seeing hasty scientific conclusions in regard to the harmlessness of the bovine tubercle bacillus in the human system proved inaccurate. Finally, I have had the satisfaction of seeing the death rate among the children of the City of New York under five years of age reduced from 96.5 per 1,000 to 59 per 1,000 per annum.

I need not enlarge on the harm wrought by some of the mistaken conclusions reached by men of science among people who are only too prone to be lulled into a false security. But I am sure that I address to-day a body of men as fully impressed as I am with the importance of this question, and I am encouraged to believe that this meeting will reach a conclusion calculated to advance the problem a long step nearer to solution.

STATEMENT.

The greatest task confronting humanity to-day is the conquering of disease.

We have met to discuss what we can do in our feeble way in the direction of solving a question of vital importance, and I say to you that the phase of the problem which we are to consider has not received the attention its surpassing needs deserve.

I have been criticised for preaching the danger of our milk supply, for saying that the most destructive of all agents of disease and death is the common, ordinary milk offered for consumption in our cities. I welcome this criticism, because it is only through discussion and agitation that the public is aroused.

I think it requires no argument to prove that our milk supply, even with all the precautions thrown around it, needs further and radical reform, but I do not believe that it is generally understood to what degree it is responsible for suffering and death, particularly among young children.

You know that in this country one child out of every three that are born dies before the age of five is reached, and I claim that the majority of these deaths are preventable.

I can conceive of no work that should appeal more strongly to a people or to a government than the saving of infant lives.

Scientists are devoting their best efforts throughout the world to finding remedies for the prevention and cure of the world's greatest scourge, the most dreaded and deadly of diseases — Consumption, well named the "White Plague."

Last year in the International Tuberculosis Congress held in Paris, Professor von Behring expressed the opinion that one of the most useful results of the Congress was the acceptance of the fact by all the delegates that bovine tuberculosis is transmissible to human beings, the bovine bacilli being more dangerous even than are the human bacilli.

Fourteen years ago I lived in the Adirondacks, and to be sure of having pure milk for my family, we kept our own cow. One day the cow fell sick and died suddenly. We thought she had been poisoned and called in a veterinary surgeon. He found the cause of her death easily enough — her lungs had been eaten away with consumption.

So you see that when we thought we were drinking pure, wholesome milk, we were taking into our systems the germs of disease. From that time, no more raw milk was used in our family.

That was fourteen years ago. Now I will tell you of a recent experience to prove to you the correctness of my convictions. I met one of our prominent butchers a short time ago, and we talked about pure food. I asked him to tell me something about the condition of the cows slaughtered for this market. He told me that out of a herd of one hundred and eleven that he recently bought, twenty-seven were found to have diseased lungs — were far gone in consumption. He also said that about ten per cent. of all cows bought for slaughter in this market were afflicted with the same disease.

I asked his permission to use this information, and though for obvious reasons he did not wish me to use his name, he sent me a letter, which I have as proof of the statement.

Another fact which has come to my knowledge is that in one of the greatest dairy farms of this State, stocked with high-bred, registered cows, last year over one hundred had to be killed because they had developed consumption. This occurred on a farm where to my personal knowledge the most scrupulous cleanliness prevails, and where everything is conducted on the most thorough scientific principles of sanitation. If I had been asked, "Is there any milk brought to this market fit for use in its raw state?" I should have unhesitatingly recommended the milk from this farm as the best.

Not long ago I had a letter from a very wealthy resident of this city, a man whose name you all know. He wrote me that to prevent any possibility of the milk provided for his little son being impure, he had built a new cow barn at his country place, and at great trouble and expense selected eight of the finest and best bred young cows, registered Alderneys, for his private use. One of the cows took sick shortly after, and he had her killed. A post-mortem developed that the cow had tuberculosis. He then had the remaining cows tested by a representative of the State Agricultural Department, and he pronounced *five of the remaining seven cows tubercular*.

And he cried out to me: "Where and how can I get milk fit to give my child?"

Thirteen years ago I was asked by the Editor of the *Forum* to write an article for his publication on the necessity for pure milk.

I did so, and my article was returned to me with the request that I eliminate a certain paragraph — he said it was too radical, too daring. The paragraph, which was finally printed as a foot note, was as follows:

"Milk is not always good in proportion to the price paid for it, nor free from the germs of contagion because it has come from cattle of aristocratic lineage. The latter quality, as recent experience has shown, carries with it a special susceptibility to tuberculosis."

Thirteen years ago I believed that the pasteurization of milk was the only remedy. To-day I KNOW IT.

In June, 1895, Dr. Jacobi, in endorsing the use of pasteurized milk, wrote me: "There is nothing so instructive as a success, and a single practical proof speaks louder than any number of volumes." Therefore,

I will cite the case of a public institution where the death rate of the children was so high that it became a public scandal. This was on Randall's Island. Though the city had their own herd of cows, which were kept on the Island, carefully tended and apparently in perfect health, they did not succeed in reducing the death rate below forty-four per cent. At that time I was President of the Health Board, and the institution came under my direct charge. I had a chance to study the appalling conditions that still prevailed there. After I had resigned from this office, encouraged by the results I had already obtained in the city, I installed on the Island a complete plant for the pasteurization of milk. In the very first year of its operation, the death rate of the children made the astonishing drop of from 44 per cent. to 20 per cent. Remember, there was no other change made either in diet, hygiene or management of the institution. The rate was later reduced to the still lower figure of 16.5 per cent.

Just think of the enormous saving of lives if pasteurization were generally adopted.

I have done as much as one man could to establish and promote the use of pasteurized milk everywhere, but all that has been accomplished is merely a fraction of the good that could be done were the supply of pure milk made a municipal function as much as the supply of pure water. There can be no question but that the supply of milk everywhere should be pasteurized, not only that intended for infants, since the use of raw milk for adults is almost equally fraught with danger.

It has been said that the pasteurization of milk will not destroy the tubercle bacillus, but this assertion must have been made by some one not familiar with the process of pasteurization, or not familiar with the proofs on the subject.

Scientists agree that a temperature of 150 deg. for twenty minutes will destroy the tubercle bacillus. Drs. Smith, of Boston; Pearson, of the University of Pennsylvania; Bang, of Copenhagen; Russell, of the University of Wisconsin; Moore, of the New York State Agricultural Department and Ravenel, of Philadelphia, all eminent scientists, are a unit in agreeing upon this. And as in the process of pasteurization the milk is heated to a temperature of 157 deg., and kept there for twenty minutes, it follows that the tubercle bacillus must be destroyed.

If it were possible to secure pure, fresh milk direct from absolutely healthy cows in any large city, there would be no necessity for pasteurization.

If it were possible to establish a system of public inspection and examination of milk which would prevent the supply of polluted milk, there would be no cause for pasteurization.

If it were possible by legislation to obtain a milk supply from clean stables, after a careful process of milking, to have transportation to the city in perfectly clean and close vessels, then pasteurization would be unnecessary.

But I am compelled to conclude, after years of study that these conditions are *absolutely impossible* of attainment.

Corrective laws have been passed, medical societies have directed their energies to a betterment of conditions, but I do not think it will

be denied that a very large proportion of the milk now sold in New York City is unfit for consumption.

No agitation for a better milk supply, by whatever methods attempted, can be without good result, but I have preferred to direct my work to the attainment of positive results, and these I know can be attained by pasteurization only.

While efforts directed toward the prevention of contamination at the source of supply are attended by many difficulties, and the net results, therefore, are extremely small, such efforts should not be abandoned. On the contrary, even though milk be pasteurized, and I believe the time will come when the entire milk supply of all large cities will be pasteurized, there should be no relaxation of vigilance to prevent initial contamination.

In the course of years human ingenuity may have found a means of entirely eliminating disease; it is for us to do our share with the light that is given us.

Scientists play their part in adding to the sum total of human happiness, but the layman has no unimportant role. I believe the solution of the question before us is not scientific but practical. *It is not cure — it is prevention.*

Public opinion is the greatest force in human achievement to-day, and when the public have been sufficiently aroused to the fact that the prevention of disease is quite as essential as the erection and maintenance of hospitals for the cure of disease, we shall have the first requisite for intelligent legislation on this subject. Since the fact can easily be demonstrated that the conditions surrounding the milk supply of our city entail an appalling penalty of suffering, disease and death, surely prejudice, ignorance and criminal neglect of obvious precautions must have had their day.

INSPECTION DOES NOT GIVE SECURITY.

ADDRESS BY MR. NATHAN STRAUS BEFORE THE BOARD OF ALDERMEN OF NEW YORK CITY, FEBRUARY 21, 1907.

I DO NOT think it is any longer necessary to argue the merits of the case. If it were possible to secure pure, fresh milk direct from absolutely healthy cows there would be no necessity for pasteurization.

If it were possible to establish a system of public milk inspection and examination which would prevent the supply of polluted milk, there would be no cause for pasteurization.

If it were possible by legislation to obtain a milk supply from clean stables after a careful process of milking, to have transportation to the city in perfectly clean and close vessels, then pasteurization would be unnecessary.

But I am compelled to conclude, after years of study and observation, that these conditions are for the present, at least, absolutely impossible of attainment. It now remains only to determine how best to apply the remedy — pasteurization.

AUTHORITY OF SCIENCE.

But it may do no harm to recite here what the foremost scientists of the day now have to say on the subject of the perils of raw milk, and the remedy for them.

Prof. Von Behring, the discoverer of antitoxin, says: "The milk fed to infants is the chief cause of consumption and produces tuberculosis in adults long after."

Dr. Bryan Bramwell, of Edinburgh, says: "Infection by milk is the most important source of tuberculous disease."

Sir Frederick Treves, in a recent address to the National Health Society, London, says: "The absolutely reckless use of raw, unpasteurized milk is little short of a national crime, for which we are paying heavily in ill health, disease and death."

Metchnikoff, successor to Pasteur, in his recent work, "The New Hygiene," confirms and corroborates all this. And our own Prof. Jacobi, one of the greatest living authorities on infant diseases, protested against the feeding of raw milk to children long before Pasteurization was ever heard of, and advocated short boiling.

ATTITUDE OF THE HEALTH DEPARTMENT.

While there may be some difference of opinion as to the best method of bringing about a general pasteurization of milk, there can, I repeat, at the present day, be absolutely no doubt of the necessity, and therefore it grieves me to note the attitude of the present president of our Health Department.

Before whatever method we may adopt can be put in operation, much good could be accomplished by an active propaganda by the Health Department, showing the people the danger of raw milk and how simple is the process of pasteurization, or in lieu of that, short boiling as advocated by Prof. Jacobi.

When the greatest living scientists and physicians have lent their unreserved and unconditional indorsement to pasteurization as the only practical means of remedying the evil by which thousands and thousands of untimely deaths are brought about each year, then I think we may be permitted to disagree with the president of our Health Department, who says it is unnecessary to pasteurize the milk.

CONDITIONS FOR STARTING EPIDEMICS.

Such a harvest of disease and death as has recently been reaped in other cities, owing to the use of polluted milk, must necessarily suggest the use of extra precautions here. I must remind you that we have always with us, as milk is now dispensed, the conditions for starting such epidemics as have recently ravaged other communities.

You may call epidemics incidental and accidental, but there is nothing either incidental or accidental in the fact that of the cows supplying our city with milk thousands are infected with the germs of tuberculosis. Every day the milk from these thousands of diseased cows is sent to our city and fed to our children and to those who drink raw milk.

The Board of Health advocates inspection of dairies. Inspection is excellent, but inspection that does not inspect the cow for tuberculosis or the milk for germs offers small hope of security.

THE IDEAL MILK AND THE REAL MILK.

ADDRESS BY MR. NATHAN STRAUS, BEFORE THE BOARD OF ALDERMEN OF NEW YORK CITY, MARCH 7, 1907.

MILK, according to Dr. Metchnikoff, the successor of Pasteur, is the most perfect food, provided it is free from the germs to which it is peculiarly susceptible, the germs of tuberculosis, typhoid, scarlet fever and diphtheria.

Under ideal conditions, that is, where the milk is obtained from perfectly healthy cows under perfectly sanitary conditions, and consumed within a short time after it leaves the cow, it may be free from danger.

Dr. Darlington, of the Health Board, has asserted that these conditions can be obtained through inspection by employees of his department.

Gentlemen, it requires no extraordinary acuteness of perception to realize that the milk supply of New York City, which comes from five or six different states, the herds of which are all more or less infected with tuberculosis, cannot with the closest inspection be in that ideal condition which I have described.

We are practical men, you and I, and we must meet conditions as they exist, not as we would wish them to be. I have nothing against the theory of inspection, except that I believe it to be an ideal dream.

To say that it is possible for inspectors of the Board of Health who have no real authority outside of this city, to control conditions on thousands of farms so as to make them ideally perfect does not seem ordinarily reasonable.

I am not going to waste your time or mine in discussing that part of the subject. I shall welcome any good that may come from inspection, but protest most emphatically against leaving the people of this city, or of the country at large, with no other protection than inspection.

THE PERIL OF TUBERCULOSIS.

As a business man I want to get down to the practical at once. The Royal Commission of Great Britain, in a report issued last month, a result of years of investigation, says:

"Cows' milk, containing bovine tubercle bacilli, is clearly the cause of tuberculosis in man. A very considerable amount of disease and loss of life, especially among the young, must be attributed to the consumption of cow's milk containing tubercle bacilli."

Coming to our own country Dr. Abraham Jacobi, admittedly one of the greatest authorities, has for many years taken the same attitude and advised the boiling of milk before pasteurization was known.

Now, whatever these experts say we should do to save ourselves from the dangers of this raw milk, one and all agree, "pasteurize." When pasteurization is not available, boil.

There are a great many persons who have not studied the question thoroughly, who have only a half-knowledge respecting it, and who assert that pasteurizing the milk, or boiling it, will remove some of the valuable nutritive qualities and even possibly induce such malnutrition as may result in rickets or marasmus.

Gentlemen, the authorities I have quoted are the greatest scientific and medical experts in the world today. They have spoken only after thorough experience and experimentation. They are not alarmists. They know thoroughly whereof they speak. One and all deny those assertions of the half-informed.

A HOMICIDAL ACT.

Only very recently Dr. C. W. Saleeby, the successor of the late Prof. Huxley, stated:

"In the present state of our ordinary milk supply, the giving of unsterilized milk to a child is a potentially homicidal act. The objection to boiling milk is pure superstition.

"I now speak of tomorrow literally, when tuberculous milk will be delivered, as it has been today, at innumerable doors in this country. What is to be done with it? The plain old answer for tomorrow is, that it must be boiled."

Advising you from my own experience, from the knowledge that I have gained by careful study of this subject, and with the desire to be practical and business-like, I would say just this: Direct all your efforts toward securing proper scientific pasteurization of such of the milk supplied to New York City as has not been certified.

This would mean a very large portion of it, about 90 per cent., which should be boiled or pasteurized before being given to children.

COST AND DANGER OF DELAY.

And here let me say that the objection that has been raised in some quarters that pasteurizing the milk would increase its cost should be exploded by the state through its willingness to pay this added cost without increasing the cost to the consumer.

The city and the state pay for hospitals, for sanitary inspection and for other methods of protecting the public health. This is more important than any other, and should be a municipal and state expense, pure and simple.

While we are waiting for the pasteurization I have suggested — I warn you that every day's delay is a crime against the health of the community. I urge you to warn the public through the Department of Health if it will heed your advice; and upon your own authority, if it refuses to do so, to boil the milk.

When pasteurization is not available, boil, boil, boil. By this I do not mean to boil for an hour or a half hour, but only long enough to bring the milk to the boiling point, as Prof. Jacobi advocates. This is the advice of the greatest authorities on this subject and should be known in every home in this country.

I have presented to you not only the results of my own study and experience, but also the precepts and experience of the greatest living authorities. If there be any opposition, compare its source and its standing with that of the great names I have presented to you.

RAW MILK.

PAPER READ BY MR. NATHAN STRAUS, BEFORE THE AMERICAN
ANTI-TUBERCULOSIS LEAGUE AT ATLANTIC CITY, N. J.,

JUNE 4, 1907.

SCIENCE has demonstrated two facts that are of supreme importance to the millions of people who live in daily dread of "the great white plague." These facts are:

1. That tuberculosis is a preventable disease.
2. That raw milk is the common cause of tuberculosis.

I speak from fifteen years' practical experience when I add this third proved fact of science, namely,

3. That the peril of tuberculosis in milk can be absolutely removed by proper pasteurization.

These statements sum up the progress that has been made since Prof. Koch isolated the tubercle bacilli.

These facts ought to be more widely known that men and women may take heart and cast away the fear that now makes them quail before this most dreaded of all diseases.

Dr. E. C. Schroeder, the Federal investigator of the modes of tubercular infection, has proved the relative unimportance of other methods of infection. He says:

"There is no means by which persons are brought into closer contact with fresh tuberculous material than milk obtained from, and in the environment of, tuberculous cows.

"Our plain duty is not to neglect one of the chief, if not the most important, source of infection—the tuberculous dairy cow.

"The observations made by the writer definitely show that the frequency with which milk contains tubercle bacilli is greatly under-estimated, especially when it is milked in the customary way from tuberculous cows with healthy udders, or from entirely healthy cows in a tuberculous environment."

Such an authoritative body as the British Royal Commission on Tuberculosis, in its careful and conservative statement of the result of its six years' investigation, says:

"A very large proportion of tuberculosis contracted by ingestion is due to tubercle bacilli of bovine source. A very considerable amount of disease and loss of life, especially among the young, must be attributed to the consumption of cows' milk containing tubercle bacilli."

Dr. D. E. Salmon, when chief of the Dairy Division of the Department of Agriculture, wrote:

"It must be admitted that the milk from tuberculous cows is often infected and dangerous when, so far as can be ascertained, the udder is in normal condition."

In the face of these irrefutable conclusions of science, it is criminal folly to rest in the ignorance of the past and to minimize the danger of raw milk.

It is easy enough to get the public to do nothing. This is the tendency of the unfortunate misstatements made by men who are ignorant of these demonstrations. Their careless brushing aside of the milk peril

is calculated to lull the people into a sense of security where there is no safety.

Regard for human life demands that the proved facts of the peril of tuberculosis in the milk be admitted and declared, not denied.

Then the remedy will come in the pasteurization of the milk supplies where there is no positive proof of the origin of the milk from healthy cattle and of its protection from infection.

It is significant of the progress that is being made that within the past week two medical commissions have reported in favor of pasteurization.

The New York Commission says:

"The commission recommends that the Board of Health should, according to circumstances, require efficient sterilization or pasteurization of all milk which it finds unsafe for consumption as raw milk, on account of a suspicion of the presence of tuberculosis or other disease in the cows or unsanitary conditions at the dairy or a persistent high bacterial content."

The Washington Commission says:

"The committee, in the interest of public health, strongly advocates clarification and pasteurization of all milk."

Capt. Thomas Franklin, in charge of the Cadet Mess at the U. S. Military Academy at West Point, writes to me telling of the eradication of typhoid among the cadets by the pasteurization of the milk supply. He adds:

"I have noticed that many otherwise very well informed medical men and scientists of repute have made the positive assertion that pasteurization so changes the chemical composition of the milk that it is not the same perfect food that raw milk is; that it is indigestible and otherwise noxious.

"The best proof in refutation of this theory is an exhibit I can show you or anyone else who is interested at any time, namely, nearly 500 young men whose physical equals and whose health record it would be hard to equal anywhere else in the world, the United States Corps of Cadets, and 99 per cent. of them drink milk freely at all meals. We use an average of 180 gallons of pasteurized milk per day, and the boys who do drink it are the picture of health."

With the destruction of the tubercle bacilli in the milk, it can be safely declared that New York's tuberculosis record would be impossible.

In the past five years in this city there were 87,767 new cases of tuberculosis of the lungs, and tuberculosis of all kinds caused 47,831 deaths, which was over 13 per cent. of the total of deaths from all causes, and 28 per cent. of these victims were under 25 years of age.

It is unthinkable that this slaughter should go on unchecked, when science has laid its finger on the common cause of infection, pointing to the tubercle bacilli in the milk bottle.

But the ravages of this disease will go on until every mother knows that it is a crime to give her child raw milk and until the health authorities recognize that their first duty is to prevent the people, practically all of whom use raw milk, trying to subsist upon a diet of consumption germs.

Gentlemen, you are leading the world in this fight against tuberculosis by warring on the tubercle bacilli in the milk bottle, and I leave with you the one word that is the keynote of success — Prevention.

THE AMERICAN SOLUTION OF THE MILK PROBLEM.

ADDRESS BY MR. NATHAN STRAUS BEFORE THE SECOND INTERNATIONAL CONGRÈS DES GOUTTES DE LAIT, BRUSSELS,
SEPTEMBER 12, 1907.

AT the last Congrès International des Gouttes de Lait I was a solitary voice from America declaring that child life should be protected from infected milk by pasteurization.

To-day I come with the same message indorsed by the most distinguished scientists of my country and formally and officially promulgated by the Government of the United States of America.

Two years ago, at the Congress at Paris, I argued and pleaded for a policy that would save lives by the hundred thousand; to-day I have the honor and satisfaction to report most substantial progress toward the acceptance by my country of the milk programme then outlined.

For fifteen years I have sounded in America the warning that *raw milk kills*. In an article contributed to *The Forum*, of November, 1894, I made the following emphatic declaration:

"Here let me say that the penalty of disease and death, paid for the neglect of simple precautions in the use of milk, is by no means paid exclusively by the poor. Milk is not always good in proportion to the price paid for it, nor free from the germs of contagion because it has come from cattle of aristocratic lineage. The latter quality, as recent experience has shown, carries with it a special susceptibility to tuberculosis. In milk intended for infant nutriment perfect sterilization is an absolutely essential precaution; but, simple as the process is, it is not always certain, even in the homes of the rich, that it will be properly done. I hold that in the near future it will be regarded as a piece of criminal neglect to feed young children on milk which has not been sterilized."

These statements whose justice will be recognized by you, fellow members of this Congress, were received with incredulity in the United States. I was called an alarmist. The dangers to which I pointed were minimized by medical men of standing. For years Prof. George M. Kober, of Georgetown University, stood almost alone in declaring and proving the dissemination of scarlet fever, typhoid, and diphtheria by means of infected milk. No longer ago than May of this year, a medical commission characterized the danger of tubercular infection through milk as "Slight," but this was the dying gasp of the opposition to the pasteurization of the milk supply, which has crumbled away as ignorance has given place to knowledge.

While I persisted in warning against the use of raw milk, I provided pasteurized milk for the babies of New York City. This was regarded as an amiable benevolence. The virtue of the enterprise, in the eyes of most people, was that it provided food for the poor at less than cost, or for nothing.

However, as the infantile death rate of New York City went steadily down, from 96.2 per 1,000 in 1892 to 59 per 1,000 in 1906, coincident with the increased use of pasteurized milk, the significance of my work became apparent, and the conviction spread that the virtue of the Straus milk was not its low cost, but the fact that the milk was pasteurized.

While this demonstration was going on in New York City, epidemics of infectious diseases in various parts of the country, especially in Boston and Chicago, were directly and indisputably traced to the use of raw infected milk, emphasizing the urgent need for action. Scientific men, studying the milk problem, were forced to decide that public safety demanded pasteurization, and in a notable statement of the problem as affecting New York City, Dr. Ernst J. Lederle, former Commissioner of Health, declared that pasteurization should be insisted upon in all cases in which there was no proof that the dairy herds were free from tuberculosis.

Investigations by Government experts, to which I shall make further reference, made clear the fact that the peril of tuberculosis in milk was *far greater and far more frequent* than had been generally understood. The studies of Prof. M. J. Rosenau, of the Public Health Service, proved that the advantages of pasteurization far outweighed the disadvantages, if there are any.

Finally, early this summer, the President of the United States became so convinced of the dangers of raw milk that he ordered a thorough official investigation of the whole problem, with a view to legislation by the Federal Congress.

These steps toward the protection of the people, and especially of the children, were the consequence of an awakening of the public intelligence and a stirring of the popular conscience. The people stood aghast at the revelation of millions of babies left daily at the mercy of disease germs hidden in the ordinary market milk.

INFANT MILK STATIONS.

In five American cities infant milk stations are now maintained and are achieving remarkable results in reducing infantile mortality.

In New York City, my own work has extended from one central station to seventeen depots and the output of pasteurized milk has increased from 34,000 bottles in 1893 to 3,140,252 bottles and 1,078,405 glasses in 1906. A total of at least 3,500,000 bottles and 1,500,000 glasses is already indicated for this year. In addition, more or less efficient pasteurization is being done by dealers to the extent of about 300,000 quarts a day.

Early this summer the municipal government of New York adopted a forward policy in setting apart public funds for the building of model milk stations in the public parks in the congested tenement districts, but the city will depend upon private philanthropy to provide the supplies of milk to be dispensed at these stations. Several years ago, I gave the first impetus to the work in Chicago by the donation of a pasteurizing plant, and now the Milk Commission of the Children's Hospital Society, a private charity, maintains ten infant milk depots, from which 400,000 bottles of pasteurized milk were dispensed in 1906. But the good effect of this work, so far as it could be shown in the vital statistics of the city, was obscured by the ravages of epidemics of scarlet fever and diphtheria, caused by the infection of a large part of the city's daily supply of raw milk in two big dairy centers and by the neglect of the Health Authorities either to exclude this milk or to require that it be pasteurized.

In Philadelphia I was able to supply the means to make a practical demonstration of the value of pasteurization in preserving infant lives

and have had the satisfaction of seeing that nine infant milk depots, maintained by the Modified Milk Society, in 1906 distributed 991,166 bottles of pasteurized milk, and that the percentage of mortality of children under five years has been reduced from 62 per cent. in 1901 to 47 per cent. in 1906. In like manner, as a direct result of my donation of a pasteurizing plant to St. Louis, the Pure Milk Commission of that city now maintains 15 depots and distributed 600,000 bottles of pasteurized milk in 1906.

Jersey City has adopted the infant milk depot plan as a municipal enterprise. Mayor Mark M. Fagan, recognizing the duty of the city to protect the lives of the children, has established a pasteurization plant and has opened four infant milk depots, all maintained at the public expense.

WARNING IN 1905.

In Paris, in 1905, I said to the Congrès International des Gouttes de Lait:

"It is milk — *raw milk, diseased milk* — which is responsible for the largest percentage of sickness in the world. Milk is the one article of food in which disease and death may lurk without giving any suspicion from its taste, smell, or appearance.

"Why, then, use it in its raw form? Why ever trust it without due precaution?

"I hold that the only safe rule is — Pasteurize the entire milk supply and make it a function of the municipality."

This statement, I believe, received the cordial assent of the scientific men of the Congress. I had been saying the same thing in America for thirteen years in the face of interested and persistent opposition, in the face of indifference and seemingly hopeless ignorance.

But I kept on saying this, with renewed courage, after the Paris Congress, and I now have the gratification of reporting to you that there is substantial agreement in America to-day, among all informed scientific men and public health officials, as to the perils of raw milk and the necessity for pasteurization.

PROOF THAT RAW MILK CAUSES TUBERCULOSIS.

One phase of the raw milk danger — and the most serious phase of all — the fact that raw milk is the common cause of tuberculosis — has been especially illuminated by the work of American scientific men.

Professor von Behring was a prophet when, in 1903, he said: "The milk fed to infants is the chief cause of consumption." Four years ago this statement savored of hypothesis: now it is proved scientific fact.

The announcement by Koch, that tuberculosis was not communicable to man from bovine sources, was followed by renewed investigations in various countries. Eminent investigators reviewed previous experimental work, repeated and extended researches upon this important point, with the unanimous conclusion that tuberculosis is communicable from animals to man, and from man to animals. Clinical observation affords abundant proof to confirm these results of experimental research.

I will not weary you with a recitation of the well-known conclusions of the British Royal Commission on Tuberculosis, which demonstrated the transmission of tuberculosis from the cow to the human being

through milk, nor will I cite to you the similar findings of the German Imperial Health Office.

But I will briefly call your attention to the investigations of the Bureau of Animal Industry of the United States Government into the modes of tubercular infection. Thorough practical experiments and exhaustive tests made by Drs. E. C. Schroeder and W. E. Cotton, at the Experiment Station at Bethesda, Md., have proved that the presence of tubercle bacilli in milk is far more frequent than has been supposed to be the case. These experts have absolutely disproved the idea that the udder of the cow must be diseased in order to infect the milk, and they have demonstrated that the presence of a single tuberculous animal in the herd is sufficient to cause the infection of all the milk of that dairy.

The tremendous significance of this demonstration is apparent when we consider the estimate that from thirty to forty per cent. of the dairy cattle are tuberculous and recognize as probable that no untested herd is free from tuberculosis.

It is necessary at this point to quote only two paragraphs from Dr. Schroeder's work. He says:

"The presence of a single tuberculous cow in a dairy stable may be responsible for the introduction of infectious material into the milk of healthy cattle."

"Observations definitely show that the frequency with which milk contains tubercle bacilli is greatly underestimated, especially when it is milked in the customary way from tuberculous cows with healthy udders, or from entirely healthy cows in a tuberculous environment."

Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, indorses the conclusions of Drs. Schroeder and Cotton in these words:

"The work as a whole shows that the general condition or appearance of a tuberculous animal gives no indication as to the time when it will begin to distribute tubercle bacilli and become dangerous; that the milk from all tuberculous cattle, irrespective of the condition of their udders, should be regarded as dangerous, and that even the milk of healthy cows, if it is drawn in the environment of tuberculous cattle, may contain tubercle bacilli."

This work of Dr. Schroeder was made public at about the time when the United States was startled by the disclosure by the Census Bureau of the fact that tuberculosis caused more deaths than any other disease, and Dr. Schroeder joined with Schloszmann and von Behring in the belief that tuberculosis, at whatever age it makes its appearance, may be due to tubercle bacilli introduced into the body through the intestines during the milk-drinking period of life.

It is the testimony of eminent surgeons of wide experience that abdominal tuberculosis (involving peritoneum, mesenteric glands and intestines) is more common among people living in the rural districts where *raw milk* is a universal article of daily food than among the inhabitants of cities, where raw milk is more costly and less easily procured.

THE WASHINGTON MILK CONFERENCE.

Coincident with the advancing appreciation of the perils of tuberculous milk, the National Capital had an outbreak of typhoid fever that was traced to the milk supply and the U. S. Military Academy at West Point had eradicated typhoid from among the cadets by pasteurizing all the milk used at the cadets' mess. These circumstances led to the organization of the Washington Milk Conference, under the leadership

of Dr. George M. Kober, Mr. Emile Berliner, and Dr. G. Lloyd Magruder, in coöperation with experts of the Public Health Service and of the Department of Agriculture, to make a thorough inquiry into the sanitary relations of the milk supply of the District of Columbia.

The result of this inquiry was thus flatly stated in the committee's report:

"The committee, in the interest of public health, strongly advocates clarification and pasteurization of all milk."

The establishment of pasteurization plants by the District Government, or by private enterprise under the direction of the public health authorities, was urgently recommended, and the committee, "being so strongly impressed with the manifold dangers connected with the milk supply," recommended, for the meantime, until milk should be pasteurized at central stations, that housekeepers subject all milk used to home pasteurization by simply bringing it to the boiling point.

This report, adopted by the Secretary of Agriculture and indorsed by the Chief of the Bureau of Animal Industry, embodies the official policy of the United States Government in dealing with the milk problem.

For the purpose of putting this policy into force, the District of Columbia, the seat of the National Government, has adopted a classification of milk as follows:

Class I. Certified Milk, produced under ideal conditions from herds proved free from tuberculosis by the tuberculin test, handled by persons free from infection, put into sterilized bottles, delivered within twelve hours from the time of milking, and not to contain more than 5,000 bacteria to the cubic centimeter.

Class II. Inspected Milk, produced from cows proved free from tuberculosis, but under less perfect conditions than Class I, and not to contain more than 100,000 bacteria to the cubic centimeter.

Class III. Pasteurized Milk. All milk of unknown origin or which does not come up to the requirements of Classes I or II to be pasteurized by heating to 150° Fahrenheit (65° c.) for twenty minutes, or 160° Fahrenheit (70° c.) for ten minutes.

Thus a practical milk reform programme has been adopted for the District of Columbia, the seat of the National Government, and an example has been set for the other cities of the country.

Time will be required to extend this policy to the other centers of population, but the work inaugurated by the Federal authorities is being pushed by competent experts under the direction of Surgeon-General Walter Wyman, of the Public Health Service, and Assistant Surgeon-General Kerr, and I am warranted in believing that the pasteurization of milk, especially in the cities, will soon be required by Federal statute.

That this will mean a steady reduction in the infantile death rate, I can assert from experience; that it will mean an enormous decrease in the number of new cases of tuberculosis annually reported, I can assert on the authority of such names as von Behring, Schloszmann and Schroeder, and I think that none will venture to contradict me when they consider that pasteurization means the eviction of the tubercle bacilli from the milk bottles.

While the agitation for milk reform has to be kept up, we are no longer talking into deaf ears; mountains of prejudice have been removed. The light of knowledge has been shed upon the subject, and the people are concerned about the necessity of securing safe milk for their babies and themselves.

In America, though the Federal Government has indorsed our campaign for pasteurized milk supplies in an authoritative utterance, we have still to make this policy effective by securing mandatory legislation and by bringing health officers to the point of requiring the pasteurization of all doubtful milk.

The prevalence of misinformation respecting pasteurization, and the efforts of interested parties to confuse the public mind by disseminating misleading assertions, induced me this summer to open a bureau of information in the City of New York. Here I have gathered such statistics bearing upon the milk question as were readily accessible, and to these I hope to add reports of all new developments. I have begun correspondence with the various health departments of the civilized world and, also, with leading medical and scientific authorities, and have arranged for an exchange of information which should prove mutually profitable. The records gathered in this manner, and by the personal investigations of competent agents, will be at the service of members of this Congress, as well as other interested persons, and prompt and careful attention will be given to any communications from responsible sources. The official address of this bureau is, "Nathan Straus Depots For Pasteurized Milk, New York City."

I came from America to this Congress for the sole purpose of helping along a work in which I am deeply interested. As an evidence of that fact, I stand ready to supply pasteurizing plants, up to the number of twelve, for service in any place or places where the need of one is pressing and the means are lacking to provide it.

VIEW OF EMINENT MEDICAL AUTHORITY.

The most that can be hoped for from the most thorough inspection possible is that the milk supplied to the city shall be microscopically clean—free, that is, from admixture of manure and other gross impurities—and containing only a few thousands of ubiquitous bacteria to the cubic centimeter.

Even then there could be no certainty that the milk would be always absolutely sterile as regards the bacilli of tuberculosis, typhoid fever and diphtheria, to say nothing of occasional accidental contamination with other pathogenic germs.

With the best inspection possible under existing or any practically conceivable conditions, the great bulk of milk delivered in New York every morning will only be fit for pasteurization—and even that is as yet far from realization.

Nevertheless, our present milk supply can be rendered reasonably safe by pasteurization, which kills the existing germs even if it does not destroy the toxins already formed or prevent subsequent growth when not kept cool and in sealed receptacles.

The only safety for the consumers of milk in this and other cities throughout the country lies in municipal pasteurization, conducted under constant supervision of the Health Department, of all except an insignificant fraction of the milk supply.

Even that fraction would be made safer by heating for twenty minutes to 155° Fahrenheit and subsequent cooling of the sealed bottles containing it to 40°.

In pasteurization only supplemented by conscientious and thorough inspection, will be found a solution of the problem of a pure milk supply.—*New York Medical Record.*

THE BEST PRESCRIPTION.

STATEMENT MADE BY MR. NATHAN STRAUS, NOVEMBER 22, 1907,
TO THE COMMITTEE OF ONE HUNDRED FOR THE FEDERAL
REGULATION OF PUBLIC HEALTH.

IF some truly wise man were asked what would be the best prescription for the future well-being and power of America, I believe he would answer:

"Cut down the appalling infant death rate and care for the health of the children."

And if he were asked how best to accomplish this, he would say:

"By ceasing to poison them with raw, infected milk, and by pasteurizing the milk supplies."

I should say that the outlook is hopeful because certain pertinent milk facts are now part of the common knowledge of the world, namely:

That raw milk is dangerous.

That pasteurization kills the disease germs and makes milk safe without impairing its taste or digestibility.

That milk produced under the most ideal conditions is only relatively safe.

That pasteurization, properly done, makes the milk absolutely safe.

Never since the first awakening of scientific men to the perils of raw milk has the outlook been so full of encouragement as in the present year. When I began to pasteurize milk for the children of the tenements in New York City in 1893 I was regarded as a harmless enthusiast with a new fad. I became an alarmist, in the estimate of the public the next year, when I said: "No plague has caused so plentiful a harvest of death as the contagion in every infant's system caused by the deleterious bacteria of milk."

I have been repeating this warning ever since I became personally acquainted with the facts as to the milk supply. If at times I have seemed to be talking to deaf ears, I can no longer feel that my words have been in vain, in view of world-wide awakening to perils of raw milk.

In this country eminent medical men, such as Prof. Abraham Jacobi, all these years have been sounding the same warning, advising parents, if they could not get pasteurized milk, to boil it, so as to kill the disease germs. They have been prophets far in advance of their times.

But in this year, 1907, the world has caught up with Dr. Jacobi.

In no sphere can more effective work for the federal regulation of the public health be done, the cause for which the committee of one hundred was appointed, than in dealing with the milk supplies, and there is reason to believe that practical and appreciable benefits will result.

The pure food law and the meat law deal chiefly with the foods of adults, who can be supposed to be able, to some extent, to look out for themselves. The babies, who cannot protect themselves from infected milk, need a pure milk law.

Such a law should provide for the extermination of tuberculous cattle, for the sanitary production of milk, and for the pasteurization of all milk that cannot be certified as safe and free from disease germs.

MILK INSPECTION—WHY IT FAILS.

BY NATHAN STRAUS.

(Reprinted from *The Milk Reporter*, April, 1908)

INSPECTION of dairies, highly desirable as it is, however thorough it may be made, spells only improvement—not safety. Therefore I am forced to reply with an emphatic “Yes” to the query—“With state-inspected dairies is general pasteurization necessary?”

Milk from carefully inspected dairies, handled with the utmost precaution, is better than the ordinary market milk, but it is not germ free. Inspection carried to the degree of perfection that results in a reasonably safe milk commands fancy prices as “certified milk,” but even this product is not absolutely safe and the great majority of the people cannot pay the price. For them the minimum price is all that they can afford to pay, and they get the ordinary milk, with the ordinary multitude of germs, with the probability of many of these germs being disease-producing.

State inspection will merely diminish the probability of the milk being infected—it will not remove the product of the dairy from the category of suspicious, doubtful, dangerous foods.

Pasteurization, on the other hand, makes the milk so treated absolutely safe and free from infections such as those of typhoid fever, scarlet fever, diphtheria and tuberculosis and from the bacteria that create intestinal disorders among babies.

The reason why inspection cannot result in the production of milk that can be guaranteed as free from the germs of disease is the facility with which it is infected.

The cow, even when apparently healthy, may give to the milk the germs of tuberculosis, and one tuberculous cow may infect the milk of an entire dairy, and of all the dairies shipping through one creamery, if the milk of the several dairies is mixed at the creamery.

The milk may become infected from the pail into which it is drawn, from the person of the milker, from dust blowing into the pail, from the water used in washing the dairy utensils, from the cooler, from the cans, in transit to the city, from the distributing plant.

Moreover any infection lodged in the milk from any of the sources of contamination to which it is exposed has remarkable opportunities to multiply itself while the milk is on the way to the consumer. Under ordinary conditions, in 48 hours, one typhoid germ may multiply to 130,000; one diphtheria germ to 550.

I am compelled to conclude, after sixteen years of study and practical experience, that the net results of inspection are extremely small, uncertain and variable.

But there is an immediate solution of the problem—an immediate remedy for infected milk, namely, pasteurization.

There is no greater authority upon this whole subject than Prof. Rosenau, director of the Hygienic Laboratory at Washington. He writes:

“We can scarcely conceive of an inspection so thorough and so constant as to prevent milk occasionally becoming contaminated with the germs of typhoid, diphtheria, scarlet fever, dysentery, tuberculosis, etc.

“We prefer pure milk, but so long as we cannot obtain it we must purify what we get. Theoretically, pasteurization should not be necessary; practically we find it forced upon us.”

MILK PASTEURIZATION AN ECONOMIC AND SOCIAL DUTY.

ADDRESS BY MR. NATHAN STRAUS TO THE STUDENTS OF POLITICAL ECONOMY IN THE UNIVERSITY OF HEIDELBERG, JULY 24, 1908.

Delivered at the Invitation of Professor Ebehard Gothein.

SYNOPSIS.

- I. Infant Mortality: Milk the Source of the Evil.
- II. The Scourge of Tuberculosis: Milk Again the Source of the Evil.
- III. The Milk Supply: Present Conditions.
- IV. The Milk Supply: Ideal Reforms.
- V. Pasteurization the Immediate Remedy.

IT is not so very long ago since, in some countries at least, Political Economy was supposed to require little more of the student than the possession of a certain amount of common sense. This naive misconception of a most difficult science has, I am sure, been effectually banished from *your* minds — if it ever was there — or you would not be making a visit to an experimental laboratory for the pasteurization of milk. Such a visit betokens that the days of the old, abstract, arm-chair Political Economy are ended. The fact that the establishment you are to visit is not a commercial undertaking, but an effort of private enterprise to awaken the public conscience, is again evidence of the change that has come over the rigid, almost inhuman methods of the oldest school of economists. At the present day the study of economics imposes a heavy burden upon its followers; they must possess much positive knowledge, and are often called upon to make temporary excursions into remote fields; and the common sense once thought to be the one thing needful must never desert them. I rejoice that the subject to which I am about to invite attention is eminently one to be judged by common sense. It is true that it is a subject fraught with immensely complicated side-issues, but the main argument is, I venture to think, as simple as could well be desired.

I.

INFANT MORTALITY.

VALUE OF INFANT LIFE.

Every modern economist, I believe, no matter what view he might take of the population question, would admit the obligation of society to preserve the lives of all its members. The obligation is recognized as especially binding in the case of infants. Once born into the world in a civilized state, the morsel of humanity has established its right to existence.

DECLINING BIRTH RATE.

Not to mention any higher motives, the mere desire to prevent economic waste suggests that not a life should be needlessly lost. The suggestion comes with special force at the present time. From all parts of the world, though most strikingly from Australia, we have the same remarkable evidence of a special decline that is going on in the birth rate. In ten years, from 1891 to 1900, the birth rate fell in England and Wales from 31.4 to 28.7 per 1,000; in the German Empire from 37.0 to 35.6; in France from 22.6 to 21.9 [Spargo, p. 8]. These figures to some extent at least indicate a physiological deterioration of the race. They show how the value of the human baby, always of late years highest in France, is steadily going up in other countries as well.

THE WASTE OF LIVES.

Upon every consideration, public and private, ethical as well as economic, the death of a little baby is a calamity to be avoided at all costs. And yet, as you are aware, the annual loss of infant lives is enormous. In the German Empire, for instance, something like 2,000,000 children are born every year, and of these about 400,000 die within the first year of their lives [Dammann, p. 23]. That is at the rate of about 200 deaths to 1,000 births, and there are few countries in Europe, except Russia, that have to deplore so high an infantile death rate as this. Here are the statistics of some of the great towns:

	Births July 1, 1903 to June 30, 1906	Deaths under 1 year of age	Death rate per 1000 Births	Diarrhoeal death rate	Percentage of deaths due to diarrhoea
Barmen	4597	605	132	47.64	36.20
Berlin	49708	9933	200	87.99	44.03
Chemnitz	8314	2253	271	135.67	50.07
Cologne	15373	3266	212	93.60	44.06
Frankfurt a. M.	9335	1446	155	53.13	34.30
Hamburg	20471	3538	173	70.98	41.07
Karlsruhe	3052	565	185	86.17	46.55
Leipzig	14734	3273	222	121.49	54.69
Mannheim	5170	1053	204	86.46	42.45
Munich	15787	3432	217	95.33	44.14

MILK THE SOURCE OF THE EVIL.

Those figures, which I take from the United States Government "Milk Bulletin" (p. 635), show the extent of the evil and also one of the principal causes. Between Barmen with its 132 per thousand and Chemnitz with its 271 there is a great difference, but even at Barmen 36.20 per cent. of these early deaths are due to gastro-intestinal disease. In some of these towns one out of every two of the poor babies falls a victim to this complaint. The rate of such deaths is heaviest during the summer months, and the reason of this is that the milk on which the children are fed favors the growth of noxious bacteria more readily at summer temperatures. The heat itself lowers the vitality and resisting powers of the infants to begin with, and then comes the milk with its increased bacterial content. I need hardly remind you that milk is an almost ideal medium for the growth of micro-organisms at any time,

but especially in summer. In a town like Berlin more than two-thirds of the babies have to be bottle-fed (v. Behring, *Bekaempfung der Tuberkulose beim Rindvieh*, etc., Berlin, 1906, p. 3), and these are just the ones to perish of intestinal troubles. It was actually found in France that of 20,000 infants who died from this cause four-fifths were bottle-fed [Spargo, p. 38]. Again, there are official German statistics to show that the mortality in the first year among artificially fed infants may be 51 per cent. as against only 8 per cent. of those nursed exclusively at the breast [Spargo, p. 39]. But the milk of mothers who themselves are underfed and who perform severe physical labor all day can hardly be a suitable diet for a baby. Sooner with the poor, later with the rich, there comes a time when the mother cannot supply the needful quantity or the desired quality of milk. It is here that pasteurized, modified cow's milk steps in. Pasteurization minimizes the dangers of a second summer. (See Professor Jacobi's letter, page 194).

II.

THE SCOURGE OF TUBERCULOSIS.

I wish now to direct your attention to another great scourge of mankind, namely, Tuberculosis, a disease which in its advanced stages, when the lungs are affected, is but too familiar under the name of Consumption or Phthisis. I am unable to give you German statistics on the subject, but in 1905, 12 per cent. of the total deaths registered in the United States were due to tuberculosis [Milk Bulletin, p. 239]. It is estimated that 150,000 or 160,000 deaths occur every year in the United States from this cause alone [ibid.; Spargo, p. 122].

HUMAN AND BOVINE TUBERCULOSIS IDENTICAL.

The disease is not confined to mankind. Cattle are peculiarly liable to be attacked by it, and it is a constant menace to the breeder and dairy-farmer. There is no longer any doubt that the disease is essentially the same both in man and in animals, and may be communicated from one to the other. The specific bacillus was discovered by Robert Koch in 1882. Moreover, the uncertainty caused for a time by the great bacteriologist's assertion in 1901 that bovine and human tuberculosis were distinct has now been removed. The vigilance of meat-inspectors is now clearly recognized to be by no means unnecessary, since the meat of tuberculous animals, if not thoroughly cooked, would expose the consumer to the risk of infection.

TUBERCULOUS MILK.

Not only the meat but also the milk of tuberculous animals contains tubercle bacilli. This discovery, made by the Danish Prof. Gustav Bang in 1890, is of the very greatest importance. There are perhaps comparatively few cows suffering from acute tuberculosis, recognizable by the ordinary methods of physical examination, and yet furnishing milk for human food. But the meat-inspectors at the slaughter-houses can find internal traces of the disease which would give rise to no anxiety while the animal was alive. Here I may mention, by way of illustration,

some results of the meat-inspection here and at Mannheim. The percentage of cows slaughtered at Heidelberg found to be tuberculous was 38, 44, 32 and 42 in the years 1903-6 respectively [Heidelberger Tageblatt 20. Januar 1908]. At Mannheim the percentages for 1904-6 were 25, 30 and 33 [Heidelberger Tageblatt 24. Januar 1908]. These cows were milked, probably, down to the very day of their death, and their milk, being mixed with that of healthy animals, might convey the germs of tuberculosis into numerous families.

THE TUBERCULIN TEST.

If we wish to know whether a given milk cow is tuberculous or not it is fortunately not necessary to slaughter her. Koch's tuberculin, a glycerin-extract of tubercle bacilli grown in the laboratory, is injected hypodermically and produces in tuberculous animals (or men) a rise of temperature sufficiently well marked to constitute an almost infallible test for even very slight degrees of infection. Only animals which fail to react to this test can be looked upon as capable of supplying milk that is above all suspicion of tuberculous taint. The application of the test by the veterinary surgeon leads to some surprises. It often reveals the startling fact that the sleekest cow in the herd, and the best milk-producer, is nevertheless tuberculous. Seven or eight years ago in Hessen-Nassau it was found that where more than 40 or 50 head of cattle were kept, nearly all of them were infected, whereas in studs consisting of not more than four head the number of tuberculous animals was as low as 3 or 4 per cent. [v. Behring, *Tuberkuloseilgung*, etc., Bonn, 1904, p. 7]. In Saxony it seems that 30 per cent. of all cattle are infected [Spargo, p. 136]; 25 per cent. was the estimate made last year (1907) for all the cows supplying the city of Washington with milk [Milk Bulletin, p. 493].

HUMAN TUBERCULOSIS: MILK THE MAIN SOURCE OF EVIL.

As regards the origin of tuberculosis in man I may confess at once that I am a believer in the doctrine of Prof. E. von Behring of Marburg. According to this eminent authority tuberculosis is contracted not so much through the nose and lungs as through the mouth and the alimentary canal, not so much by breathing bacilli emanating from tuberculous persons as by drinking the milk of tuberculous cows. It is part of his theory that the primary infection takes place in the first year of infancy, before the mucous membrane of the intestinal tract has become fully capable of resisting the passage of bacteria. This predisposes the individual to develop the disease to the full extent if at some future time he is exposed to constant infection with tubercle bacilli, say through membership in a consumptive family, or residence in apartments inhabited by consumptives. Consumption thus caught, say, by a child from its parents, is not truly hereditary, because not contracted until after birth. In the majority of cases the disease must be regarded as lying latent between infancy and the time when it calls for medical treatment. Post-mortem examinations and tuberculin tests on living persons alike confirm this. Von Behring sums up his doctrine on the practical side by saying: "*The milk fed to infants is the chief source of consumption.*" (*Tuberkulosebekämpfung*, p. 25.)

III.

THE MILK SUPPLY: PRESENT CONDITIONS.

We have thus traced to the use of cow's milk the two principal losses in our vital statistics, first, the excessive mortality of infants in their first year, and second, the annual tribute of lives claimed by consumption. It being altogether impossible to give up the use of cow's milk in the nursery, and most undesirable to banish such a food from the adult diet, it becomes imperative to seek for means to render the milk harmless. Let us first glance at the actual conditions at present obtaining in the milk industry.

THE COWS.

A large proportion of the cows, as we have seen, are tuberculous. They are often kept in stalls that give every encouragement to the disease. They are there in company with other tuberculous animals, and the amount of light and air available is often very deficient. Rough walls, damp floors, thatched roofs and unnecessary lumber, all furnish lurking-places for bacteria. In this part of Germany the cows rarely have any opportunity to pasture in the open fields. The unenlightened peasant is usually extraordinarily careless in such matters as storage of fodder and general attention to cleanliness. There should be no possibility of animals infecting their own food. The excreta should be easily removable and frequently removed.

MILKING.

How rarely does it happen that the milking is satisfactorily conducted! The person of the milker often leaves much to be desired. He comes to his work regardless of the state of his health or the state of his hands, in the very clothes in which he has, perhaps, just been shoveling manure. If he washes his hands on what does he dry them? If he washes his pails in what sort of water does he do it? Does he trouble to cleanse the udder before beginning to milk? Under ordinary conditions there is so much dirt flying about the air of the stall, so much filth adhering to the animal's skin and liable to be knocked off by the milker's hands or clothing, that it would be a miracle if none of it found its way into the broad-mouthed pails commonly used. As a matter of fact Renk in 1891 found from a series of thirty tests that a liter of market-milk at Halle contained on an average 15 milligrams of cow's excrement; Leipzig, 3.8 milligrams; Berlin, 10.3 milligrams, and Munich 9 [Milk Bulletin, p. 441-2]. "According to some authorities," we are told, "the citizens of Berlin consume 300 pounds of cow-dung in their milk daily" [id., p. 395].

TRANSPORTATION.

After the milk is drawn the chief thing is to protect it from dust and keep it at a low temperature, so that the inevitable bacteria may increase as slowly as possible. The more shaking the milk receives the more the clusters of bacteria will be broken up, and the more rapidly will they multiply. All the mixing and pouring from one receptacle to another that goes on, sometimes in most incredible situations, before the milk reaches the consumer, is injurious. Small dealers are unable

to take the necessary measures, by the provision of ice and special cooling-rooms, to keep their milk at a proper temperature. Even big dealers are singularly lax, from an American point of view, in this matter. I see even superior bottled milk being hauled through the streets with nothing better than a thin cloth to protect it from the glaring sun. I greatly fear that in this country less attention is bestowed on the milk than on the *beer*. You keep *that* cool while it is traveling and after reaching the place of consumption, and leave the milk too often to take care of itself. Truly there is something to be learned from the brewers and landlords.

BACTERIA IN MILK.

In the absence of proper precautions, milk that on leaving the cow contained relatively few bacteria may on reaching its destination some hours later be literally swarming with them. Bacteriologists are able, by a somewhat troublesome process, to estimate the actual number of these minute organisms present in a sample of milk. The numbers per cubic centimeter not uncommonly run to millions. Twenty years ago the "bacterial content" of the milk sold at Wuerzburg ranged between 222,000 and 2,300,000 per cubic centimeter in winter, and between 1,900,000 and 7,200,000 in summer. Munich milk, six hours old, has been found to contain from 200,000 to 6,000,000; Halle milk varied from 6,000,000 to 30,700,000; and a very high figure was reached at Giessen in May, 1892, namely, 169,600,000, though that is far from constituting a record [Milk Bulletin, pp. 13, 441-2]. These numbers of bacteria were estimated in one cubic centimeter, a quantity equivalent to about fifteen drops, or a quarter of a teaspoonful. *There are often more bacteria in a drop of milk than in a drop of sewage* [Bulletin, p. 421].

DISEASE GERMS IN MILK.

The bacteria present in milk may be of a perfectly innocuous kind, but it is obvious that if the milk ever comes in contact with the germs of disease these, too, will be taken up and handed on to the unfortunate consumers of the milk. Under present conditions there are plenty of chances for good milk to become infected. The cow may have waded in water containing typhoid germs; dust may have borne the germs of typhoid or scarlet fever; an infectious case may have been nursed in the family of the milker or dealer; perhaps one of these men may have been suffering himself from, say, diphtheritic sore-throat. Hence it comes that quite a number of epidemics are traceable to the milk-supply. The recently published American "Milk Bulletin" contains particulars of over twenty typhoid epidemics in Germany between 1875 and 1899 that had this origin. At Rostock, for instance, in August, 1893, several cases of typhoid occurred, and all were traced to milk from a suburban dairy which was found in a most unsanitary condition. A highly polluted well was used for washing the utensils, and very likely also for adulteration [Bulletin, p. 131]. At Rostock again, in May and June, 1885, there were eight cases of scarlet fever. All the patients were consumers of milk which was directly traced to a farm where scarlet fever prevailed and convalescents assisted in milking [Bulletin, p. 137].

The tubercle bacilli that occur in milk do not attract attention by causing a sudden outbreak of disease. Their action is rather of the

nature of slow poisoning. But their frequency in milk has often been the subject of inquiry. At Berlin, for instance, Petri found 17 per cent. of the samples he examined virulent to guinea pigs. By the same method Rabinowitsch in 1897 showed that 28 per cent. of the samples of Berlin milk he examined were tuberculous. A research by Proskauer and others (1907) revealed tubercle bacilli in 55 per cent. of the samples [Bulletin, pp. 170, 172, 173].

IV.

THE MILK SUPPLY: IDEAL REFORMS.

Such being the actual state of affairs, what are the proposals for reform? We will begin with the most ideal, and come down to the most practical.

ENCOURAGE BREAST-FEEDING.

In the first place it is obviously wise to encourage mothers to nurse their own babies wherever it is physically possible. Hence we hear of premiums being paid by business firms and municipalities for every child raised entirely without the use of the bottle. The town of Cologne, for instance, subsidizes breast-feeding, at least on a small scale.

IMPROVE THE BREED OF COWS.

Heroic measures have also been proposed, and partly begun, with regard to the cows. A small country like Denmark has already succeeded in practically stamping out bovine tuberculosis on the plan recommended by Professor Bang. With the tuberculin test as guide the only real obstacle is the expense and the danger of depleting the national stock of cattle by too sudden procedure. Another method deserving of mention is Professor von Behring's, which has now been some years on trial, for "bovo-vaccination," or inoculation of cattle with the object of rendering them immune against tuberculosis. This is a preventive, not a curative, measure, and has already been applied with Government sanction in the Grand Duchy of Hessen. Von Behring's plan is gradually to eradicate tuberculosis among cattle, and thus to cut off the main source of the tubercular infection of man. It is a grand, masterly idea, but even on the most sanguine assumptions years must elapse before the goal is attained and tuberculous milk has become an impossibility. And it is easy to see that this great reform, so profoundly affecting the agricultural and economic interests of the nation, can only be carried out with State help. There must be State inspection and State compensation for the farmers.

MUNICIPAL DAIRYING.

But now and always there would be room for the municipalities to take their part by establishing model dairy-farms, where the very best milk should be obtained under ideal conditions of cleanliness for use in municipal hospitals and other institutions, and for distribution at a low price to the infant children of the poorer classes. This is already being

done at some places in England (St. Helens, Liverpool, Nottingham, Reading, Birmingham), and I cannot forbear to remind you of a suggestion made less than two years ago by a University teacher of Political Economy who is still gratefully remembered here, Prof. Karl Kindermann. He suggested that the town of Heidelberg should establish its own dairy farm on the airy heights of the Kohlhof and assume the responsibility for the important work carried out with the aid of private charity in the Milk Department of the Luisenheilanstalt [Heidelberger Tageblatt, 27 Sept. 1906].

I for my part look forward to a time when the whole of the milk supply will be pasteurized free of charge by the town, just as at present the town undertakes the supply of gas, water, electricity and street tramways.

THE TECHNIQUE OF PURE MILK.

In order to get milk with a bacterial content of less than 1,000 per cubic centimeter, such as von Behring regards as a not unattainable ideal, or even of less than 10,000, which is the standard for "certified milk" at Rochester, N. Y., you must be prepared to devote money and careful attention to the problem. The animals must be kept scrupulously clean. Complete asepsis must be aimed at in milking. The cows' tails for instance must be cleansed with an antiseptic wash. Before milking begins it ought to be possible to pass a white kid glove over the cow's udder without staining it. The milker's hands should be washed with special precautions before milking each cow, and special milking suits should be worn. A special cooling-room must be available, and the milk should be filled into bottles and sealed for delivery as soon as possible. Always it must be kept cool. The bottles employed must be thoroughly cleaned and sterilized before the milk comes into them. To say nothing of the machinery required, it is obvious that all this needs conscientious work-people.

V.

PASTEURIZATION: THE IMMEDIATE REMEDY.

THE PRICE OF PURE MILK PROHIBITIVE.

If all these reforms were universally carried out then we should indeed have an ideal milk-supply. On an experimental scale, we may say, they have been carried out already, so that of the *possibility* of the reforms there can be no doubt. But the price of such milk is prohibitive for all but the rich: 40 to 60 pf. per liter (say 10 to 15 cents per quart) would be cheap for such milk under present conditions. By municipal enterprise and wholesale operations the price could no doubt be somewhat reduced, but it is pretty clear that it would always remain much higher than the present price of ordinary milk. The reform can only come gradually; there must be improvement before there can be perfection. That being so, there is nothing for it but, for the present at least, to adopt a temporary policy of compromise — which even an extreme idealist like von Behring is forced reluctantly to approve. This policy, in a word, is *Pasteurization*.

DEFINITION OF PASTEURIZATION.

Pasteurization, so named after the founder of bacteriology, Louis Pasteur, consists in maintaining the milk at a temperature of 60°-75° centigrade [140°-167° Fahrenheit] for 20 minutes in a closed vessel, and then cooling it rapidly. I myself prefer the higher temperature 70° c. or 158° F. I have always pasteurized at this temperature and the results have been so satisfactory that I am loath to change it. The lower temperature is advocated as less likely to destroy the chemical ferments in the milk, which are supposed, in the absence of definite information, to be of great value in making the milk digestible. You observe that the milk is *not boiled*, and *not sterilized*. The flavor is not impaired, the food value remains the same, and yet the amount of heating is sufficient to kill the disease germs whose presence is most to be feared in milk—the germs of tuberculosis, typhoid, scarlet fever, diphtheria, dysentery, cholera, etc. As to the alleged disadvantages of pasteurization, I will only say that the findings of the experts in the recent American Government "Milk Bulletin" disprove them all. When rachitis and scurvy occur, they are the results *not of pasteurization* but of some other cause, such as abnormal composition of the milk or improper hygiene. Far from being rendered indigestible by heating, the pasteurized milk is now claimed to be even more easily digested than raw milk [Bulletin, pp. 610, 626, 668-9].

PASTEURIZATION IN PRACTICE.

All this theoretical discussion about the advantages and disadvantages of pasteurization interests me, as a practical man, very little. You must remember that I have been pasteurizing milk now for sixteen years, and the system has proved *distinctly successful*, so that in my mind there is no room for doubt that the advantages far outweigh the possible disadvantages.

I first opened my milk-depots in 1893 for the distribution of good milk in New York. To quote the words of a writer last year in the "Archiv fuer Kinderheilkunde," edited by Professors Baginsky, Monti and Schlossmann: "In New York there died in the months of July and August in the years 1890, 1891 and 1892 13,201 children under 5 years of age, 6,122 of them succumbing to infant cholera. In the year 1893 Straus's Milk Charity was opened and the mortality sank as if by magic." The improvement was as a matter of fact remarkable and it amounts to this: that at the rate of mortality which prevailed in 1892 the number of deaths in June, July and August, 1906, would have been 9,743, instead of 4,426 as it actually was. This saving of more than 50 per cent. of the young lives formerly sacrificed in those three hot months has of course not been effected solely by the distribution of pasteurized milk. Other hygienic improvements have co-operated, but there can be no doubt that the milk was the prime factor.

A still more unequivocal example is the case of Randall's Island, a foundling asylum at New York, where the death rate of the children was 44.36 per cent. in 1897. Early in 1898 I introduced the pasteurization system there, and the death rate for that year, although no other change whatever was made in the diet or hygiene, fell to 19.80 per cent. There could not be more striking proof than this of the value of pasteurization.

Similar results have followed in other places where my example has been followed. At Philadelphia, where, as at St. Louis and Chicago, I installed the necessary plant, the mortality of children under 5 years was reduced 24 per cent. between 1901 and 1906.

When I came here last winter, anxious to make a practical demonstration of the efficacy of pasteurized milk, my attention was drawn to Sandhausen near Heidelberg. In this village the death rate of children under one year was 46%. It had been even higher before, and an improvement had already been gained through a Crèche, which the Burgomaster of the village erected. Still 46% seemed a high figure, and enough to warrant my belief that Sandhausen was a proper field for demonstration.

Encouraged by my experience at Randall's Island and elsewhere, I knew and I prophesied that I could reduce the death rate considerably. Accordingly I began on February 1 to supply the village with pasteurized milk from my Heidelberg laboratory. Since March 1 the milk has been prepared in a Milk Kitchen, which I installed for this purpose in the village. The first few months realized my most sanguine expectations, as the death rate by June 1 had fallen to *half* what the average had been for the same months of the five preceding years.

Insinuations were thrown out at this time — doubts were uttered, and it was hinted very strongly that the summer months alone could show whether there was any merit in pasteurization. But I knew, and again prophesied that in spite of summer heat a still lower death rate could be attained.

I was working against great disadvantages. Sandhausen is a poor village, the population consisting almost entirely of factory workers — men and women alike. The single doctor on whom the people are dependent has to work for a total population of about 4,000. The advice and guidance of young mothers was out of the question; quick medical action in case of need was an impossibility.

There is no running water in the village, and accordingly sanitary arrangements of any kind are entirely wanting. So I erected a bathing establishment in connection with the Crèche, and thereby added another factor for the saving of infant life to the foremost one of proper feeding. I had been made timid by unkindly expressed doubts, much as I relied on pasteurization alone.

We have now the record for June — the first month of the harvest of infant lives — and so far my prophecy has come true. In the five months ending June 30 only seven children under two years died, as against twenty-four, the average for the same five months of the preceding five years.

Sandhausen is no exceptional case. The same excellent results could be achieved anywhere else, provided that the local authorities would take the matter up energetically.

Why do I devote so much energy to demonstrating publicly the need of milk-reform and the immediate benefits of pasteurization? Into the personal and private reasons that first induced me to engage in this work I need not enter here. It is enough to say that it was my own sad experience which made me so determined to save the lives of other people's babies.

But I have always only considered how best and quickest to enlighten the world in a practical manner. To attain this I sought the help of the press, and it is due to its ever ready co-operation that my work and its results have been made known broadcast. Only through publicity can the advantages of the pasteurization of milk be everywhere realized. I am not a professional man, and I am therefore not bound by professional etiquette to keep secret what I know to be for the public good. The unnecessary slaughter of the innocents has appealed to me, and I have sought and found the remedy to stem the evil, which I am giving to the world in spite of selfish opposition, in spite of intrigue and all manner of provocation. My impatience as a reformer is, I think, justified by the crying nature of the evil and the apathy I encounter. At last in America, after sixteen years of agitation, the time seems to have come when Congress will take up the question of the milk-supply from a national point of view. That has been my constant aim, and it is because I am bound to Germany by old and dear ties that I wish to see the same public spirit developed here, and in all the countries of the civilized world.

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U. S. GOVERNMENT EXPERTS WHO INVESTIGATED "MILK AND ITS RELATION TO PUBLIC HEALTH."

The following are the names of the gentlemen whose arduous labors are represented, in part at least, by their contributions to "Milk and Its Relation to Public Health." They have earned the gratitude of all who are interested in the milk question: that is, or should be, the public at large.

PUBLIC HEALTH AND MARINE HOSPITAL SERVICE.

DR. WALTER WYMAN, Surgeon General.
DR. MILTON J. ROSENAU, Director Hygienic Laboratory
DR. JOHN F. ANDERSON, Assistant Director
DRS. J. M. EAGER and J. W. KERR, Asst. Surgeons Gen'l
DR. JOSEPH H. KASTLE, Chief Division of Chemistry
DR. CH. WARDELL STILES, Chief Division of Zoology
DR. LESLIE L. LUMSDEN DR. GEORGE W. McCOY
DR. J. W. SCHERESCHEWSKY DR. JOHN W. TRASK
DR. NORMAN ROBERTS DR. WM. WHITFIELD MILLER:

DEPARTMENT OF AGRICULTURE.

DR. HARVEY W. WILEY, Chief Bureau of Chemistry
DR. A. D. MELVIN, Chief Bureau of Animal Industry
DR. E. C. SCHROEDER, Superintendent Experiment Station
MR. E. H. WEBSTER, Chief of Dairy Division
DR. B. MEADE BOLTON, Biochemic Division
DR. JOHN R. MOHLER, Chief of Pathological Division

HEALTH DEPARTMENT DISTRICT OF COLUMBIA.

DR. WM. CREIGHTON WOODWARD, Health Officer

This report, published as Hygienic Laboratory Bulletin No. 41, made a volume of 758 pages. It soon became one of the best known publications ever issued by the Government and the edition of 5000 copies was exhausted. Demands for the Report came from all countries of the world and a new edition, revised and enlarged to 834 pages, was issued as Hygienic Laboratory Bulletin No. 56.

AMERICA'S LATEST CONTRIBUTION TO THE MILK QUESTION.

A REVIEW BY MR. NATHAN STRAUS OF THE U. S. GOVERNMENT REPORT "MILK AND ITS RELATION TO PUBLIC HEALTH,"
PUBLISHED IN WASHINGTON, D. C., 1908.

AT a time when the question of a pure milk supply is engaging public attention everywhere, it is of interest to note what fruit a similar agitation has borne in the United States. I have the satisfaction of knowing that it was owing in a great measure to my efforts that the interest of our government was aroused in a *pure milk supply*. Sixteen years ago I started my work in New York City and extended it gradually to other places. The results which followed wherever I introduced pasteurized milk were brought to the notice of the Public Health Department of the United States; and the very extensive report recently published, "Milk and Its Relation to Public Health," is the outcome of my agitation.

In the meanwhile I had sent to Mayors of cities and Presidents of Health Boards letters, urging them to take up this question, which my experience had taught me to be such a vital one. I demonstrated practically by the distribution of pasteurized milk the great need and the great results that can be attained. Coincident with this distribution the infantile death rate of New York City steadily decreased from 96.2 per 1,000 in 1892 to 58.4 per 1,000 in 1907. Similar good results followed wherever pasteurized milk was introduced.

THE NEW BULLETIN AND WHAT LED TO IT.

About the same time that my first milk depot was opened in New York (1893) Dr. Henry L. Coit organized the first "medical milk commission" in the United States, that is to say, an association of medical practitioners on the one hand, and of dairymen on the other, for the production of milk of especially high quality, known as "certified milk," primarily for medical purposes. The spread of these associations and the opening of infants' milk depots in various cities served to awaken public interest, until at length in 1904 there began a regular battle for pure milk in New York, which led to the holding of an important Milk Conference there in November, 1906.

In the Summer of 1906 there were typhoid outbreaks in the District of Columbia, which, thanks to an efficient inspection service, were traced to the milk supply. The District of Columbia is only sixty square miles in extent, but it includes Washington, the seat of the national government, and the Hygienic Laboratory of the Public Health Department of the United States is situated there.

In June, 1907, President Roosevelt ordered a thorough investigation of the milk problem to be made by the officials of the Public Health Service with the assistance of the Department of Agriculture. With extraordinary dispatch the results of this inquiry are now laid before us in a volume of about 750 pages, entitled "Milk and Its Relation to Public Health" (Bulletin No. 41 of the Hygienic Laboratory, Washing-

ton). The book is full of facts bearing on the milk problem as it exists in America, in England, or indeed in any other country.

The Bulletin is not the report of a commission. It consists of twenty-one essays or monographs by the departmental specialists on various aspects of the milk question, with an introduction in which Surgeon-General Wyman briefly alludes to the most striking results of each of the papers. Without specifying the titles of all the contributions it is enough to say that a number of authors write on the connection between milk and disease; others deal with the chemistry and bacteriology of milk; others show the requirements that must be met in practical dairy-farming; there is one masterly treatise on the feeding of infants; and other papers criticise preventive methods, legal standards and technical processes at present in use to protect the milk-consumer.

It is unnecessary for me to attempt a summary of the whole book. I propose to leave for the present the purely scientific sections and those relating to milk-inspection and dairy-hygiene, while I refer more in detail to the teachings of the book on the two matters most nearly connected with my own propaganda, viz., disease in milk, and pasteurization as the remedy.

GOOD MILK INFECTED SPREADS DISEASE.

I suppose it is well known by this time that the germs of disease can be carried in milk, and that epidemic outbreaks are often traceable to that source. Typhoid, scarlet fever, and diphtheria are the diseases most frequently spread in this way, but we learn from the Bulletin that Asiatic cholera (p. 241), dysentery (p. 603), and Malta fever are also communicable through milk. One special subject for inquiry by the American investigators was the frequency of these "milk epidemics," as they are called. An enormous amount of statistical material relating to the last fifty years has accordingly been collected and sifted. Here you will find summarized the essential details of 317 outbreaks of typhoid, 125 of scarlet fever, and 51 of diphtheria, *all owing their origin to infected milk*, though it is admitted that not *all* the statistics available from foreign sources have been included.

These figures appeal directly to British readers, for most of the statistics come from the United Kingdom. Thus while the United States furnishes 132 instances of typhoid, 27 of scarlet fever, and 18 of diphtheria, the United Kingdom can "boast" of 138, 96, and 32 cases respectively, the sum-total of all three diseases from other countries being only 50. This of course does not mean that the sanitary conditions are worse in the United Kingdom than elsewhere. It is a proof of the excellent work of your English medical statisticians, but it is also a terrible warning of the dangers lurking in milk.

TYPICAL INSTANCES OF MILK EPIDEMICS.

Look for instance at the Dublin typhoid epidemic of August, 1899. No fewer than 66 persons were smitten with the disease, and all of them were supplied with milk from the same dairy. Now there were cases of typhoid being nursed at that dairy, and it was probably the handling of the milk by one of the persons acting as nurse that caused the milk to become infected.

The very same thing happened on a smaller scale three years previously in Dublin. In May, 1896, the two children of a small milk dealer

were down with typhoid, and again it was probably the children's sick-nurse who infected the milk in the shop. The business being a very small one, only 14 cases resulted.

Take another typhoid case—from Liverpool. In October, 1897, twenty-seven children were suddenly seized with typhoid after eating ice-cream at a stall kept by an Italian whose wife at home was lying sick of the disease.

Liverpool illustrates also the connection between milk and scarlet fever. In February, 1904, fifty-nine cases of scarlet fever occurred among the persons using the milk from a dairy where there was a child recovering from this complaint.

As for diphtheria, take the example of Edinburgh, where in May, 1900, something like fifty persons contracted the disease because they were consumers of milk from a dairy farm where milkers and others were found to be suffering from sore-throat which on bacteriological examination proved to be true diphtheria.

UNHEALTHY COWS — UNHEALTHY MILK.

So far we have been dealing with cases where milk had become infected on its way from the cow to the consumer. There is of course another class of cases, in which the milk is already infected when it leaves the cow. The contempt of precaution is more culpable, perhaps, when human diseases are allowed to infect the milk, but it is only another degree of neglect which tolerates the sale of milk from diseased cattle.

TUBERCULOSIS.

That negligence must now be branded as criminal which allows animals suffering from tuberculosis to contribute to the supply of milk destined for human food. It is ridiculous at this late hour to quibble over any possible difference there may be between bovine and human tuberculosis.

Koch, the discoverer (1890) of the specific germ of the disease, had at first no doubts whatever as to its identity in man and in animals. Ten years passed before he asserted the contrary (1901), and the assertion has now been disproved by means of extensive experiments undertaken at the instance of various governments.

Englishmen will probably be content with the verdict of the British Royal Commission on Tuberculosis as to this matter, but the doubters in America and even the Germans themselves have been forced to the same conclusion, viz., that tuberculosis, whether in animal or man, is essentially the same disease, and is *communicable from animal to man in milk*.

This I hold to be a reason of paramount importance for insisting on public control of the milk supply, or at least on precautionary measures *for securing non-tuberculous milk for the innocent children who must have milk and who cannot protect themselves.*

THE TUBERCULIN TEST.

One of our greatest debts to Koch is the invention of the tuberculin test for ascertaining, in cases where merely physical examination fails, whether or not an animal is tuberculous. Tuberculin, itself a product of the growth of tubercle bacilli in the laboratory, is injected hypoder-

mically and produces in tuberculous individuals a marked rise of temperature, and this, under proper precautions, becomes an almost infallible index of the unhealthy condition which it is desired to recognize and eliminate. The veterinary surgeon can thus say precisely which of the cows in a herd are to be considered tuberculous, and ninety-seven times out of a hundred he is right.

Now look at the results of the tuberculin test as applied in America. More than 1,500 of the cows supplying milk to the City of Washington were officially tested last year, and nearly 17 per cent. had to be pronounced tuberculous. This inspection was neither universal nor compulsory, so it is fair to assume that only owners who were confident of the healthy state of their herds submitted them to the test. Had all the cows in all the herds been examined, no doubt the percentage would have been much higher, say 25 per cent. (p. 493). The figures are first-hand, and speak for themselves.

THE DANGER FROM DIRT.

The Bulletin mentions incidentally (p. 240) an estimate made in 1906 that at least 8 per cent. of the milk sold in London is the product of tuberculous cows. The American evidence, however, justifies us, I think, in assuming that one cow out of every four is, slightly at least, tuberculous. It is possible, perhaps, for some of these cows to give perfectly healthy milk. This point is not yet definitely settled, but it is perfectly certain that the dung of such cows may contain the bacilli (pp. 163, 493), and this is a point of great importance. People do not realize the quantity of solid dirt that gets into the milk-pail in the course of milking.

It is not only that dust flies about in the air of the stall but the milker's hands or clothing may easily detach portions of dirt from the skin of the animal, unless those ideal regulations are observed which at present are only enforced at a few dairies of the very highest class, and which add so considerably to the cost of the milk as to make it a luxury except for the rich.

"According to some authorities," says the Bulletin (p. 395), "the citizens of Berlin consume 300 pounds of cow-dung in their milk daily." One hardly likes to think what the estimate would be for London! The worst of it is that merely mechanical means, such as filtration and centrifuging, while removing the foreign bodies, actually promote the growth of any bacteria present by breaking up the groups in which these minute organisms live.

TUBERCLE BACILLI IN MILK.

Let us see next what the bacteriologists find who examine samples of milk as sold in the great towns. In Liverpool, for instance, in 1898-9 six per cent. of the samples from town dairies, and 17 per cent. from country dairies, contained tubercle bacilli (p. 173). About the same time 9 out of 16 dairies supplying the colleges at Cambridge were found to be selling them milk that was tuberculous (p. 171). I do not know whether the undergraduates are still taking their chances with such milk—things may have improved since then—but if such was the state of the milk provided for the privileged sons of the well-to-do classes, what was likely to be the quality of the milk drunk by the poor babies of the London slums?

The latest research on milk-tubercle is Dr. John F. Anderson's examination of the Washington milk, full details of which are given in the Bulletin. The results are summed up in the statement that approximately 11 per cent. of the dairies whose milk was examined contained tubercle bacilli virulent for guinea pigs. The test, I ought to say, consists in inoculating guinea pigs with specimens of the milk; and as some guinea pigs, like some human beings, have better constitutions than others, and are able to resist the effects of a comparatively weak dose, it may be said that all the percentages obtained in this way are, if anything, under the mark as an index of the frequency of tubercle bacilli in the milk.

THE REMEDY.

It is easy to see the magnitude of the evil, but what is to be the remedy? Obviously the thing to be aimed at is compulsory examination of all cows by the tuberculin test and weeding-out of those found to be tuberculous. This is distinctly recommended in the Bulletin (p. 192), and it is very wisely suggested that the objectionable cows should be purchased out of a Government compensation fund, as in fact is already done in Pennsylvania (p. 499).

This is assuredly a most important, if not the first, requirement — to raise the veterinary standard of the cattle throughout the country to the highest possible pitch. It is, however, still more imperative to urge the necessity of improvement in dairy procedure from first to last, so as to minimize the risk of infecting healthy milk on its way to the consumer. Much of this improvement could be effected without any great outlay, but, as already hinted, the maximum of scrupulosity entails an increase in the price of the product which places it beyond the reach of ordinary purchasers.

There remains, therefore, *for the present at least, but one way of dealing with all milk whatever*, except in a few special cases where it is procured under exceptionally favorable conditions — *and that is, in my opinion, pasteurization.*

RECOMMENDATIONS OF THE EXPERTS.

The writers in the Bulletin fully agree with me on this point. I am entitled to congratulate myself a little on the change that has come over professional opinion, for when I began to interest myself publicly in the milk question I was almost alone in my demand for universal pasteurization — and it could always be said of me that I was but a layman.

It is now more than thirteen years since I wrote in "The Forum" (November, 1894): "I hold that in the near future it will be regarded as a piece of criminal neglect to feed young children on milk which has not been sterilized"; and now compare those words with the recommendations of the specialists in the Milk Bulletin.

Dr. Leslie L. Lumsden writes (p. 159) that "to prevent the spread of typhoid infection in the milk supply of cities * * * pasteurization of the milk * * * is the best measure."

Dr. John R. Mohler recommends, as a veterinary authority (p. 506): "That all milk * * * shall come from * * * tuberculin-tested cattle, which shall be re-tested at least once a year or be subjected to pasteurization under the supervision of the Health Department in case the herd is not tuberculin-tested."

Dr. Joseph W. Schereschewsky, writing on "Infant Feeding" (p. 668), says: "During the summer it is better to pasteurize or to sterilize all milk used in infant feeding."

DR. ROSENAU'S OPINION.

The author of the paper specially devoted to "Pasteurization," Dr. Milton J. Rosenau, Director of the Hygienic Laboratory, maintains throughout the judicial attitude of the man of science, but it is not difficult to see the side toward which the practical man in him inclines.

"We must protect ourselves," he says (p. 606). "We prefer pure milk, but so long as we cannot obtain it we must purify what we get" (p. 625). "Special cases may require raw milk, but the general public should be protected" (p. 627). And after giving us all the arguments for and against, he concludes with these words:

"Theoretically, pasteurization should not be necessary; practically, we find it forced upon us. The heating of milk has certain disadvantages which must be given consideration, but it effectually prevents much disease and death, especially in infants during the summer months" (p. 628).

PASTEURIZATION — ITS ADVANTAGES.

The great value of Dr. Rosenau's paper, to my mind, is its unprejudiced discussion of the alleged disadvantages of pasteurization. The advantages are of course thoroughly emphasized also, and they admit of very simple statement.

The effective pasteurization of milk, or heating of milk as Dr. Rosenau prefers to call it, consists in maintaining the milk at a temperature of 140° Fahrenheit for 20 minutes in a closed vessel, and then cooling it rapidly. Exposure to that temperature for that amount of time is fatal to the germs of tuberculosis, typhoid, diphtheria, dysentery, cholera, etc. (p. 598), but does not destroy the chemical ferments present in milk, which are supposed, in the absence of definite information, to be of great value in making the milk digestible.

Now it is pretty generally admitted that milk heated in the way Dr. Rosenau describes is a great safeguard against the diseases mentioned, and that it has a beneficial effect in reducing the risk of infantile diarrhoea, but there still are doctors who believe that its disadvantages outweigh its merits as a food for infants.

The objections are carefully gone into one after another by Dr. Rosenau, but he and Dr. Schereschewsky between them are able to reply very satisfactorily to them all.

ALLEGED DISADVANTAGES.

For instance, it has been asserted that scurvy may result from feeding children with heated milk, but our two doctors show that in the rare instances when it occurs it is very likely due to over-feeding with a milk that is excessively fat and deficient in potassium salts. In all cases the scurvy readily yields to simple treatment.

Rickets is another disease that has been attributed to the use of pasteurized milk, but the general opinion of physicians regards it as due to other causes — defective alimentation and improper hygiene (pp. 597, 626).

So far from pasteurized milk being more difficult of digestion than raw milk, as is sometimes asserted, the heated milk is found to be more completely absorbed than the raw (pp. 610, 626, 669); the curd is softer and will therefore behave in the stomach more like the fine curd of human milk (p. 669); large fat-containing curds are less likely to be formed in the stomach (p. 668). "The evidence seems clear that the pasteurization of milk at 60°c. [60°centigrade = 140° Fahrenheit] for twenty minutes does not appreciably deteriorate its quality or lessen its food value" (p. 625).*

THE SAVING OF INFANT LIVES.

The alleged disadvantages may therefore be dismissed and we come back to the manifest benefits of pasteurization. It clearly makes milk a safer article of diet for all who use it. Above all, it saves the lives of infants. No better illustration of this fact is known to the writers in the Milk Bulletin (pp. 237, 612) than the oft-quoted figures relating to the infants' hospital at Randall's Island, New York, "where the mortality in 1897, with raw milk, was 44.36 per cent., while in 1898, with pasteurization of the milk" undertaken at my suggestion in an apparatus that I presented to the institution, "it was 19.80 per cent."

Speaking generally, the rate of infantile mortality is still everywhere too high. While modern sanitation has been steadily reducing the general death rate of the whole population of civilized countries, the mortality of infants under one year of age has failed to fall in the same proportion (p. 230). The average death rate of such infants for the whole of England and Wales (1895-1904) is 150 for every 1,000 births. Out of every 1,000 children born in the country 150 are destined to die before they are twelve months old, and locally the proportion must be much higher — in Manchester and Salford, for instance, not far short of 200 (p. 231). Of course one way to save some of these lives is to revive the practice of breast-feeding, but much can be done by giving up the *laissez faire* policy with regard to the milk supply.

• CONCLUSIONS.

The chief reason for the acute state of the milk question at the present moment, as pointed out by Surgeon-General Wyman (p. 11), is the high rate of infant mortality, coupled with a declining birth rate. The milk can no longer be allowed to take care of itself: it calls aloud for appropriate treatment. Whether that treatment is to be administered by some public body, beginning with inspection of the dairy farm, or whether it is to be left to private management and restricted to the domestic kitchen, is a question of national temperament and public finance.

In America, I feel sure, this important Milk Bulletin will before long be followed by Federal legislation.

England, I am happy to see, has also recognized the importance of the question, and I cannot believe that she will hesitate to make the responsibility for a pure milk supply a public charge.

*I have always pasteurized at 157° F. for 30 minutes, and this heat has not been found to destroy the chemical ferments. Experience is better than theory, and my experience has so demonstrated the success of 157° that I am loath to change my method.

How can nations grudge the money for this great service when taxes for enormous military and naval expenditure are cheerfully borne? There is a nobler warfare to which we are called: war against dirt, disease and death; war in defence of our most precious possessions — the infant inheritors of the destiny of the world.

Heidelberg, July, 1908.

My experience during a seven months' residence in this city has only confirmed my previous views. *After all it is impossible by inspection and control to insure a pure milk supply.*

Official statistics show that 42.42 per cent. of the cows slaughtered here in 1906 were tuberculous. This figure is probably not higher than elsewhere, and only testifies to the careful work done by the slaughter-house authorities.

Despite all the precautions which I know are being taken here, such cows are milked to the last day; their milk is mixed with that of healthy animals, and the entire supply thereby infected.

In Sandhausen, near Heidelberg, the death rate of children under two years of age was 46 per cent. Encouraged by my experience on Randall's Island, I began on the 1st of February, 1908, to supply this village with pasteurized milk. During the first month I sent the milk from my Heidelberg Laboratory. Since the 1st of March the villagers have prepared the milk themselves with an apparatus supplied by me and installed in the village by the kind co-operation of Buergermeister Hambrecht. And I am happy to be able to announce that in spite of the unfavorable weather of this spring and a few deaths caused by inflammation of the lungs the death rate, according to the official statistics, amounts to only one-third of the average death rate of the last five years.

Before sailing for America on August 27 I received this telegram:

Nathan Straus, Passenger Cedric, Queenstown:

Since February 1, 1908, there died in Sandhausen eleven children under two years of age, against twenty-five for the corresponding months in 1907, and against thirty-two average for the five preceding years. We use same milk as before, only pasteurized.

(Signed) FRANZ HAMBRECHT,
Bürgermeister.

WARNING FROM AN INVESTIGATOR.

Dr. E. C. Schroeder, Superintendent of the Experiment Station of the Department of Agriculture at Bethesda, Md., thus sums up his investigations:

"Man is constantly exposed to fresh tuberculous material in a helpless way through his use of dairy products from tuberculous cows and cows associated with tuberculous cattle.

"It seems from this array of facts, every one of which is based on positive experimental evidence, that we should feel no doubt regarding our plain duty, which is, no matter what other measures we adopt in our fight against tuberculosis, not to neglect one of the chief, if not the most important, source of infection — the tuberculous dairy cow."— *Bureau of Animal Industry Bulletin No. 93*. See also *Bulletin No. 99*, by the same author.

THE CONGRESS ON TUBERCULOSIS.

COMMENTS BY MR. NATHAN STRAUS IN A LETTER TO DR. G. LLOYD
MAGRUDER, OF WASHINGTON, D. C.

New York, October 5, 1908.

My dear Dr. Magruder:

IT is certainly fitting that a milk meeting should end the brilliant series of conferences incident to the International Congress on Tuberculosis, and I deeply regret that I am unable to come to Washington to listen to the wisdom of the men who have made the Public Health Service and the Department of Agriculture agencies for the saving of human lives.

In no part of its extended spheres of influence has the United States Government rendered such important service to humanity as in its scientific proof of the fact that raw milk is a common source of tuberculosis in man as well as a medium for the conveyance of other infectious diseases, and no recommendation of any government has had such life-saving potency as the plain and explicit advice to pasteurize milk given in Hygienic Laboratory Bulletins 35, 41 and 45, and Dairy Division Bulletin 114. And I am glad to have this opportunity to give personal credit to you for helping so materially to set in motion the activities that resulted in Bulletins 41 and 114.

There is tremendous reason to take courage and forge ahead in the campaign against tuberculosis, in the plain and emphatic teaching of the learned men who composed the International Congress. It is seldom that truth is so dramatically vindicated. Convinced as I am myself of the infectivity of milk from tuberculous cows or from cows in herds in which there is tuberculosis, I nevertheless marvelled at the absolute unanimity on this point in the Congress. I say "unanimity" with deliberation, for if you will study the proceedings of the Congress you will observe that without exception every scientific man who has actively continued investigations of the relation of bovine and human tuberculosis—every one, I say, who has actively continued these investigations agreed with the British Royal Commission, the German Imperial Health Office and the United States Government experts that tuberculosis is transmissible from cow to man through milk, butter and cheese.

To make possible the cheering predictions of the stamping out of the great white plague we must cry aloud this message of science to humanity. We must print it in big types and we must post it where all may read. We must drill into the minds of men the fact that milk is a common cause of tuberculosis.

This done, this fact made a part of the common knowledge of humanity, men and women will demand the one obvious remedy, namely, that the milk supplies be made free from the living, infecting, killing tubercle bacilli by pasteurization.

As the infantile death rate has steadily decreased in New York City with the increasing use of the pasteurized milk dispensed at my milk stations, and in many other cities where I have taken up this work, so with the general adoption of pasteurization, the ravages of tuberculosis will be steadily diminished, and I venture to predict that within a generation from the time that pasteurization becomes the rule, tuberculosis will be a minor item in the vital statistics of the world.

While the Tuberculosis Congress was in session there were over 1,500 new cases of the disease reported in New York City. Such a dismal record would not be possible under a pasteurization law such as Chicago will put into force on the first of next January.

All success to you and your associates in your efforts to teach all who stand in fear of the great white plague that pasteurization is positive prevention.

Yours very truly,

Nathan Straus

THE PRACTICAL SIDE OF THE MILK PROBLEM.

EXTRACTS FROM AN ARTICLE BY MR. NATHAN STRAUS IN "THE INDEPENDENT," NOVEMBER, 1908.

THE milk problem is not a theoretical one — it is intensely practical. It has to do with the preservation of health and life. It was because I was a practical man that I began my real life-work of saving the lives of babies by supplying Pasteurized Milk from Infant Milk Depots in New York City.

I call the system of Pasteurization practical. There is another system of milk purification that is theoretical.

The theorist says, "Give us clean, raw milk." By all means do so. I say. But when you have made your milk microscopically clean, you want to go still farther and make it bacterially clean, and you can effect this only by pasteurization.

The clean milk advocates would groom the cows, after killing off all that are tuberculous; would dress the milkers in sterilized duck suits, with close-fitting caps; would asepticize their hands and have them draw the milk from the cows into sterilized buckets, having narrow openings covered with sterilized gauze; would cool and bottle the milk under the most sanitary conditions, and would have the consumer pay the price.

The result would be that he would have milk that would, after all, be only relatively safe — not absolutely sure to be free from the germs of disease — for certification does not pretend to mean that the milk so labeled is certified to be free from disease germs, but simply that it is guaranteed to come from healthy cows and to be handled in the most sanitary manner possible. It means that the milk so "certified" comes nearest in point of safety to pasteurized milk.

That certified milk does not practically solve the milk problem is further shown by the fact that there are only some 60 dairies in this entire country that produce such "milk de luxe," their entire output being only about 35,000 quarts a day out of the 43,000,000 quarts consumed every twenty-four hours in America. Besides, the retail price of this certified milk is from 12 to 24 cents a quart. There are only 20,000 people in all New York and only 50,000 in the rest of the country who seem willing to pay this price.

Recognizing these facts there are those who are willing to be less scrupulous about the absolute cleanliness of the milk. Their cry is for "Inspected Milk."

If inspected milk reaches the standard of certified milk, it will be sold as such and at the price that product commands. If it falls below that standard it is far below the standard of practical safety and is not to be regarded as fit for use in the raw state.

I am a thorough believer in official inspection of dairies, creameries, distributing plants and milk shops, but I am too familiar with the loopholes of the system, even when most elaborately planned and most efficiently enforced, to believe that inspection can ever do more than make the milk supply "more fit for pasteurization."

CHICAGO TEACHES THE WORLD.

New York, Dec. 26, 1908.

My dear Sir:

ABOUT six years ago I visited Chicago with the avowed object of TEACHING your people something about milk and its relation to the public health.

On that occasion I met, among others, Dr. Frank Billings and Dr. Fernand Henrotin. So deeply did they impress me with their zeal in grappling with the dangers lurking in unclean milk, that I remarked the time would come when the people of Chicago, under the leadership of such progressive scientific men, would TEACH ME something about the subject that had engaged my active interest since 1892.

This may have seemed at the time the expression of a thought born of a hope inspired by the cordial welcome your people gave to one who had come to them with a mission. In the light of what has occurred since my visit to Chicago it may have been an intuition.

During the years that followed my visit, I watched with interest and increasing satisfaction the beneficent results of the dispensing of pasteurized milk in your city by the Milk Commission, under the leadership of Dr. Billings.

When a new Commissioner of Health was appointed in 1907, after Chicago had been scourged by scarlet fever that was definitely traced to the milk supply, I wrote on April 27 to the new Commissioner, Dr. W. A. Evans, again offering my services, and he came to this city, affording me the pleasure of personally showing him my laboratory and the process of making milk safe from such infections as had caused Chicago so much sickness and so many deaths.

I, therefore, wish to be among the earliest to congratulate your municipal government for having conferred upon Chicago the splendid distinction of being the first city in the world to enact a law making it obligatory for its milk supply to be pasteurized, except the small portion of it that comes from cows proved to be free from tuberculosis, and requiring also that the cream used in making butter be pasteurized.

When this law becomes operative, it will mark an epoch in health-protecting, disease-preventing legislation. For the first time in the history of civilization the common means of spreading the White Plague will strike the stone wall of LAW. Thus you vindicate my intuition of six years ago.

When Chicago's milk supply is HONESTLY pasteurized, the decrease in the number of cases and in the death rate from such preventable scourges as Tuberculosis, Typhoid and Scarlet Fevers, and Diphtheria will make other cities eager to emulate her example. The saving of human lives in your city will establish new and gratifying figures for the compilers of vital statistics to deal with.

I say "HONESTLY pasteurized," for the commercial spirit may seek to evade the law by substituting for the efficient, germ-killing process, a hurry-up method of heating milk for half a minute, which merely preserves the milk and does not kill the disease organisms. This does more harm than good. In order to kill the pathogenic bacteria it is necessary to keep the milk at 157 degrees for twenty minutes.

I am quite safe in predicting glorious results if Dr. Evans is upheld in the strict enforcement of this law, if half-way measures are not tolerated, if strict supervision is maintained.

Should you so desire, I, or my personal representative, will come to Chicago to give what aid is possible to facilitate the practical organization of your pasteurizing plan.

With best wishes for the success of your philanthropic and humane administration, I am

Very sincerely yours,



The Hon. F. A. Busse,

Mayor of Chicago, Chicago, Ill.

WHY THE DEATH RATE DOES NOT GO DOWN.

STATEMENT BY MR. NATHAN STRAUS, DECEMBER, 1908.

THE reason why the infantile death rate has not gone down more than three points in New York City this year is that while the babies supplied from my infant milk depots have been saved from disease, others have had raw milk from diseased cattle, or have put their trust in the worthless so-called "commercially" pasteurized milk.

This is not a local issue, but is one of world-wide importance. The farmers must be protected from diseased cattle and the babies must be protected from milk that masquerades as "pasteurized," when it is not.

It is up to New York state and to every other state and to the Federal government to stop both these death-dealing frauds.

New York state has no closed law against the importation of dairy cattle from other states. Pennsylvania, New Jersey, Maryland, Massachusetts, and I think Vermont, have. Consequently, the Buffalo stock yards are the dumping ground for all tuberculous cattle from Ohio, Indiana, Michigan, Illinois and other states.

Probably 75 per cent. of the cows rejected by other states are sold into New York for dairy purposes. The rest are so bad that no one will buy them.

WHY WE STILL HAVE TUBERCULOSIS.

STATEMENT BY MR. NATHAN STRAUS AT THE TUBERCULOSIS EXHIBITION, PHILADELPHIA, FEBRUARY 13, 1909.

TUBERCULOSIS is an unnecessary disease. It can be wiped out. It is a crime to tolerate it.

Nearly 20 years ago I helped to secure the adoption of an ordinance forbidding spitting in public places, and that means of spreading the disease has been pretty nearly abolished.

Strenuous campaigns of education have impressed upon the public the necessity of sanitary living and of decent care on the part of consumptives, so that the spreading of disease by infection from human victims has been reduced almost to a minimum.

Yet we still have tuberculous. Why? Because the milk of tuberculous cows is almost universally used — milk teeming with living, virulent germs that set up the infection wherever they find lodgment in a susceptible human system.

The necessary step, the practical step to take in the warfare on tuberculosis is to stop this implanting of tuberculosis germs in human beings.

How? By killing the germs. Heat the milk to 157 degrees for twenty minutes — that's pasteurization — and the danger of infection is removed without impairing the milk.

This process is so simple, so efficacious, that I expect to see it universally adopted. Then tuberculosis will disappear.

WHY THE CITY SHOULD REQUIRE PASTEURIZATION

ADDRESS BY MR. NATHAN STRAUS BEFORE THE BOARD OF ALDERMEN OF THE CITY OF NEW YORK, APRIL 12, 1909.

WHEN I appeared before the Aldermen on March 7, 1907, in support of an ordinance to provide for the pasteurization of all milk that cannot be certified, I cited the opinions of the leading scientific men of the world in support of the method of saving children's lives that I had been practically pursuing in this city and elsewhere with undeniable success for fifteen years — the method that I adopted at the foundation of my work in this city in 1892 and that I promulgated in a letter to the Mayors of all of the American cities on June 8, 1895.

I now come to you with the added experience of two more years and with the added weight of the indorsement of pasteurization by the Federal Public Health Service, by the International Milk Congress, by the International Medical Congress, by the International Congress of Hygiene and by the New York Milk Committee, which two years ago, before this board, opposed this measure of public safety.

When I stood before you two years ago there was no dispute as to the success of my work in saving the lives of babies, but the idea of applying my proved methods to the milk supply of a great city was considered novel. Now we have the example of Chicago, which has begun the enforcement of a law such as you are considering, and in the past year I have pasteurized the milk supply of Sandhausen, in Germany, with the result that the death rate among the children has been cut to less than half the average death rate for the preceding five years.

In urging you two years ago to save the children of this city from tuberculosis and other milk-borne diseases, I said:

"Under ideal conditions of production, the milk may be free from danger. To say that it is possible for inspectors to control conditions on thousands of farms, so as to make them ideally perfect, does not seem ordinarily reasonable. I welcome the good that may come from inspection, but protest most emphatically against leaving the people of this city with no other protection than inspection. To be practical and business-like, I would say just this: Direct all your efforts toward securing proper scientific pasteurization of such of the milk supplies as has not been certified. I warn you that every day's delay is a crime against the health of the community."

NO ASSURANCE THAT ANY MILK IS SAFE.

Since I said that two years ago we have had a great deal of inspection. Very remarkable work has been done, we are told, in improving dairy conditions, but we still do not have safe milk. The milk supplies brought into this city teem with bacteria, and there is no assurance that any of this milk is free from the germs of disease.

A clean bill of health cannot be given even to the milk produced under ideal conditions. I have had personal experience in this matter the past fortnight.

Offered a supply of milk for my laboratory from one of the most ideal dairy farms in the whole country, owned by a wealthy gentleman who is known from one end of the nation to the other, I eagerly entered into a contract to take the whole output of this big dairy. Imagine my

consternation when the report of the Board of Health Laboratory showed that this milk was full of tuberculosis.

What then can one expect of the milk of ordinary dairies?

Now this illustrates the necessity for your ordinance.

Under the present regulations the milk is dumped into the gutter if the inspector finds that its temperature is too high. The milkman is fined if it is proved that he has adulterated the milk or has skimmed off too much cream, but the milk has been sold and used before the disease germs have been discovered, and even when the Health Board knows that the milk of a certain dairy contains disease germs, the sale of that milk is not prohibited.

There is only one way to get at this constant danger of infection, and that is to pasteurize the milk. Go on with inspection. As the Medical Record says, "Inspection will make the milk more fit for pasteurization." But don't depend upon inspection alone.

KEEP THE PEOPLE OUT OF THE HOSPITALS.

The city is paying millions to support hospitals. It is time for the city to do something to keep people out of hospitals, by seeing to it that the two million quarts of milk coming into this city daily from 40,000 dairy farms do not contain the living organisms that produce tuberculosis, typhoid and scarlet fevers, diphtheria and summer complaint.

Stamp out the common source of these diseases by pasteurizing the milk supplies and you will not only cut the death rate in half, you will not only save thousands of families from unnecessary sickness and grief, but you will save money for the city by reducing the drain upon the city's purse for hospital maintenance. It will be a good investment.

The supplying of pure water is a municipal function. I do not suggest that the city should go into the milk business, but I do believe that the city should have pasteurization stations.

The big dealers, under this ordinance, will erect their own plants and will pasteurize their milk, and if the work is done under the supervision of the Board of Health, it will be easy to compel such pasteurization as will make the milk absolutely safe.

Then the city could have stations conveniently located where it could receive the milk of such dealers as do not have their own pasteurization plants, and the milk could be turned back to these dealers in an hour or two properly pasteurized and bottled and iced.

I have done as much as one man and one purse can do to save the lives of the children of this city. Now I must put the work up to the city. I am supplying pasteurized milk for some 2,500 babies a day. Every baby in the city is entitled to such milk, and no growing child or adult ought to be exposed to the dangers of raw milk.

Manifestly this work is too vast for one man, and I am not rich enough to endow the work that I am doing so as to assure its continuance.

I have done my part in showing what can be done to save the lives of the babies and to combat tuberculosis. Now it is for the city to take up this work and extend it so that every one within the limits of the municipality may be protected and the death rate and the sickness rate may be cut down, and New York may be the healthiest and the happiest city in all the world.

THE COST OF PREVENTABLE SICKNESS.

STATEMENT BY MR. NATHAN STRAUS AT THE BUDGET CONFERENCE,
AT COLONY CLUB, NEW YORK CITY, APRIL 20, 1909.

I COME here to-day because in the past year there has been an increase of 8,638, or 55 per cent. in the number of cases of scarlet fever in this city. The total was 24,426, three times as many cases as in 1905 or 1906. The number of deaths was 1,333, an increase of 537, or 67 per cent.

Tuberculosis in 1908 showed 23,325 new cases in this city alone, an increase of 3,600 over 1907, or 18 per cent., notwithstanding the active campaign against this disease.

These are facts that compel me to come here and to say with all earnestness that it is time for this city to stop these preventable diseases.

But I come here to-day as a business man, trying to avoid sentiment and to deal with the problem of the prevention of disease in a matter-of-fact, business-like way, as one draining the city's purse.

Sickness and accidents and the attendant poverty this year are costing the city directly \$8,375,000. The next budget will be higher. The figures are:

For Bellevue and allied hospitals.....	\$1,102,745
For private hospitals	4,760,650
For Department of Charities.....	2,512,605

Total\$8,375,000

This takes no account of the amount expended by private philanthropy. This \$8,375,000 comes out of the taxes.

This takes no account of the cost of sickness to the individual family. Just two of the milk-borne diseases — scarlet fever and the new cases of tuberculosis — in 1908 cost the people at least \$27,000,000, on the basis on which statisticians reckon, and the 130,817 cases of tuberculosis developed in this city in the past seven years, Prof. Irving Fisher calculates, have cost the people \$1,046,536,000 — enough to wipe out the entire city debt and to build all the subways needed.

My proposition is that the city stop this waste of municipal and private funds by stopping the common cause of these and other diseases.

One-half of 1 per cent. of the money appropriated for current municipal expenses (\$109,322,039 in 1909) would give every child in the city the pure milk that it is entitled to, and a chance to escape illness.

Now we are paying \$130,000 a year for milk inspection, and we have the largest number of cases of scarlet fever and tuberculosis in the history of the city, and we will continue to have these plagues so long as the live germs are fed to the children.

Pasteurize the milk and the germs cannot set up the infections.

I might appeal for the lives of the babies. I might urge the sparing of the mothers from unnecessary care and grief, but my point to-day is that this is a practical method of stopping the most enormous waste of money that any sane, civilized community ever permitted.

Science has provided the remedy; it is the duty of the city to apply it.

SHIELD THE BABIES FROM THE MILK THAT KILLS.

LETTER BY MR. NATHAN STRAUS TO ALDERMAN REDMOND.

New York, April 29, 1909.

Dear Mr. Redmond:

I WANT to thank you and the members of your committee for the courtesy with which you heard me when I stood alone in the Aldermanic Chamber battling for the lives of the babies against the paid advocates of the interests that want no restraint put upon the sale of tuberculous milk in this city.

I know that you are trying honestly to do what the people want and what is best for them. Squared with this rule, your report, I am sure, will be that the people do not want milk from tuberculous cows, and that it is best for the public good for you to exercise your authority to stop the sale of such disease-breeding milk.

I am asking nothing for myself, but I do ask, for the defenceless babies that they be shielded from the milk that kills.

I do not ask for the pasteurization of the entire milk supply of the city, but I do tell you, from my eighteen years' practical experience, that no milk should be allowed to be sold anywhere unless it comes from tuberculin tested cows, or unless it has been properly pasteurized. And this is exactly what your ordinance provides.

I do not propose to engage in controversy with those who speak for commercial interests in opposing the safety of the babies.

I am not an issue in this effort to save the lives of the children. The issue is whether or not to permit the killing of babies to continue.

I have no personal interest in this matter, except the feeling that any right-minded man ought to have when beholding such preventable slaughter, but those who seek to persuade you to let this slaughter go on, have interests which make them incompetent to advise you.

These people would mislead you by telling you that inspection can make the milk safe. What can 11,000 inspections in a year accomplish with 40,000 sources of supply? An inspection once in four years will do as much to make milk pure as a bath once in four years will do to make a man clean.

As I told you, the Health Department found tuberculosis in the milk of one of the finest dairy herds in this state. The records of the Health Department show that, with milk inspection, there was an increase last year of 3,600, or 18 per cent., in the number of new cases of tuberculosis.

Until inspection includes the tuberculin test, applied at least once every six months, it will be a superficial mockery. Until inspection thus weeds out all the tuberculous cattle from the 40,000 dairies and closes all other avenues of infection, the safety of the babies will require such measures as are proposed in the ordinance now before you and have already been adopted and put into operation in Chicago.

I have given you the facts of my experience, and they have not been questioned by one single disinterested man. I plead for the babies. Their fate is in your hands.

Very sincerely yours,



The Hon. James W. Redmond,

*Chairman Committee on Laws and Legislation,
Board of Aldermen, City Hall, New York.*

PUTTING BABIES IN COFFINS.

A LETTER TO THE HON. CHARLES S. DENEEN, GOVERNOR OF ILLINOIS.

May 1, 1909.

Dear Governor:

IT has caused me grave concern and no little astonishment to observe the desperate measures resorted to by an officer of the state of Illinois to hinder and nullify the intelligent efforts of Health Commissioner Evans to protect the people of your great metropolis from the unnecessary diseases that are caused by impure milk.

I can hardly think that you would endure the situation that has thus been created if you were to realize, as I do, from my eighteen years' experience in saving the lives of the babies, that every effort put forth to stop the splendid work of Dr. Evans is, in effect, the putting of babies in coffins and the tearing of the hearts of mothers.

The scandal of the campaign conducted from Springfield against the health of the people of Chicago has spread into other states, and it does seem to me that the welfare of the country at large demands that the state of Illinois should cease to allow its influence and its official publications to be used in furtherance of a policy of infant slaughter.

In its beginnings, this attack upon Chicago seemed worthy only of being ignored, as the petty spite of a man who was disappointed, but when he uses his authority as an official of the state to try to force condemned milk upon the people of Chicago, and when he makes the monthly bulletin of the State Board of Health of Illinois a vehicle for the dissemination of attacks upon the wise measures resorted to by Chicago to save the lives of the babies—when he goes to these lengths, it seems to me that this official has made himself amenable to your authority.

With these attacks in themselves, I am not concerned, for they fall with the weight of their own mendacity. But that the slaughter of the babies should seem to have the sanction of the state of Illinois, and that Chicago's great work of life-saving should be hindered thereby, are matters that I feel compelled to bring to your attention.

If I seem to write with much wrath, it is because I have been grappling with the various forms of death and disease that lurk, unsuspected, in raw milk, and know the seriousness of the crime of allowing children to be fed upon unpasteurized milk. It is because I have demonstrated in my experience that proper scientific pasteurization of milk saves lives and works no harm to the milk that I am so urgent in advocating this means of sparing lives and saving mothers from care and grief.

If you could go with me among the children of our tenements in New York and see some of the 2,500 babies who are now thriving upon pasteurized milk from my stations and hear the mothers tell you of other children killed by infected milk, or if you would look back to the typhoid and scarlet fever epidemics caused by infected milk in Chicago, you would marvel that any one could have the hardheartedness to seek to stop such work as Dr. Evans is doing, and you would not allow any one under your authority to hinder him.

What Dr. Evans can do, if supported instead of hampered, is shown by the fact that for the first time in the history of Chicago there is now a turn in the hitherto steadily rising tide of tuberculosis, and by the further fact that the city has had no epidemics the past year.

For the sake of humanity, that suffers so much needless sickness; for the sake of the mothers that have to bear the burdens of disease and death, use the strong right arm of your authority to uphold Chicago in its fight against the sicknesses that can be abolished by pasteurization of the milk supplies.

Very sincerely yours,

The Hon. Charles S. Deneen,
Governor of Illinois.

Nathan Straus

MOTHERS' DAY.

AN OPEN LETTER TO THE CLERGY.

New York, May 1, 1909.

To the Reverend Clergy:

ON Mothers' day, May 9, I understand that many of the clergy will preach on filial duty, while hundreds of thousands will wear the white flower in token of their reverent honor of their mothers. This beautiful observance, suggested by Miss Anna Jarvis, of Philadelphia, ought to have an uplifting effect upon humanity, for it must be apparent to all thoughtful observers of modern conditions that many of the things that are amiss in our twentieth century life spring from the unhappy failure to adequately estimate and appropriately honor motherhood.

It seems to me, too, that the occasion should suggest to the clergy the opportunity to exert their powerful influence toward the lifting of the burdens that too often bruise and crush the hearts of mothers — the burdens of unnecessary sickness and preventable deaths.

My eighteen years' experience in fighting the milk-borne sicknesses have proved that tuberculosis, typhoid and scarlet fevers, diphtheria and summer complaint frequently have their origin in milk that contains the germs of these diseases; that these infections from raw milk can be prevented by pasteurizing the milk, namely, by heating it for at least twenty minutes to at least 157 degrees; that such pasteurization invariably reduces the death rate among children at least one-half where the mortality has been excessive.

It is particularly the mother who is weighed down with care and torn by grief when these preventable sicknesses strike her little ones, and a most fitting practical good would result to the mothers of the land if the day set apart in their honor should be used to spread abroad the knowledge that they can deliver their children from these maladies and to stir up the health authorities to follow the example of Chicago in adopting the life-saving method of pasteurization.

The function of the pulpit is to attack evil, and there is no greater crime perpetrated in civilized lands than the slaying of defenseless children. But few people realize that this atrocity is being committed on a wholesale scale that is appalling. In 1895 I called it criminal carelessness to give a child raw milk. In the light of the disclosures of science, verifying my teachings of those days, in the light of the urgent advice of the United States Public Health service to pasteurize milk, it can be described only as a monstrous crime to permit thousands of children to be slain annually by infected milk. Surely this is something for the pulpit to denounce.

Yours very truly,

Nathan Straus

"Neither war, nor pestilence, nor famine claim as many victims as Impure Milk. It is the most terrible foe of humanity, all the more because it gives no outward sign of danger."

"I earnestly hope and expect that the time is coming when no human life will be uselessly sacrificed. Let us hope that this useless slaughter will be stopped. But let us not only hope."

— Nathan Straus, in interview, September, 1908.

"I have always given to medical men large credit for reducing the death rate from tuberculosis, and have insisted that it is up to the health officers to reduce the number of new cases by preventing the sale of tuberculous milk. What we want from them is not explanations, but prevention."

— Nathan Straus, in interview, May 16, 1909.

AN EFFICIENT PROGRAMME FOR THE PREVENTION OF TUBERCULOSIS.

New York, May 12, 1909.

*National Association for the Study and Prevention of Tuberculosis,
Washington, D. C.:*

WARMEST greetings and enthusiastic praise are due the National association upon the occasion of its fifth annual meeting, because of the incalculable service rendered in bringing the International Congress on Tuberculosis to this country, and because of the multiplication of sanatoria in the United States to more than 200, largely through the influence of the campaign so vigorously conducted by this association.

Yet this meeting would be barren and unprofitable if the National Association rested in contemplation of work well done, and failed to recognize that the methods of prevention urged in its literature do not strike at one of the greatest causes of the multiplication of tuberculosis victims.

Increase of population may explain 10,157 deaths from tuberculosis in New York City in 1908, as compared with 8,883 in 1902, but it does not justify 23,325 new cases in 1908, where there were only 12,914 in 1902, almost doubling the year's record in six years.

The last two years have seen diligent and thorough application of the methods of prevention embraced within the scope of the work of this association, yet the number of new cases of tuberculosis reported in New York was 19,725 in 1907, 23,325 in 1908, an increase of 18 per cent., and in the first four months of the present year 8,755 new cases have been reported, indicating a total of 26,265 for 1909, or 33 per cent. more than in 1907.

These figures are tragic for the city cited as "leading the whole world in the warfare against tuberculosis," and their significance must be duly considered by this association.

Dr. Trudeau, the real pioneer in systematic combat against the white plague, at the New York exhibition, said: "Prevention offers the most promising field for effective work."

And we must have prevention that prevents, if we are to cut down this rapidly increasing roll of tuberculous patients.

Prevention that deals only with infection that may come from the tuberculous patient, and ignores the mischief wrought by the tuberculous dairy cow, is the sort that we have had, and it has failed to prevent a 33 per cent. increase in the number of victims of the disease.

This association would be untrue to the International Congress, for which it was responsible, if it were to rest content with this sort of prevention, for that congress unanimously decreed that "measures are to be continued against bovine tuberculosis and that its transmission to man is to be recognized."

That resolution of the delegates from thirty-three nations was a call to the foes of the great white plague to move forward their battle lines and to enter upon a yet more fruitful campaign against the most deadly foe of mankind.

The situation is far too serious for any further pothering over quibbles about a microscopic difference in the appearance of the tubercle bacilli found in man and those found in cows. Dr. Mohler, of the Department of Agriculture, among others, has shown that the two forms of the bacillus are due to the media in which they live, and that each type changes to the other when transplanted.

Dr. Schroeder, of the agricultural experiment station, points out that "if the two types really differ in an important way, it is only that the type commoner in cattle is of much higher pathogenic virulence than that commoner in man."

Dr. Ravenel, of Wisconsin, and Dr. Theobald Smith, of Harvard, have isolated the germs of bovine type in the tissues of children who have been killed by tuberculosis, and I have before me the records of 63 cases of children in which the bacilli were undoubtedly bovine. If in some cases of children and in many cases of adults the germs are found to be of the so-called human type, the variation is probably only the morphological change that Dr. Mohler has shown to result when the bovine bacillus dwells long enough in human tissues.

These are now scientific facts, corroborated by a host of scientific men.

The Bureau of Animal Industry and Prof. Moore, of Cornell, have shown the extent of tuberculosis among dairy herds, their investigations indicating that one-third of the cows are affected and two-thirds of the herds.

Investigations in Washington showed one out of every eighteen samples of milk taken to be tuberculous, and that one out of every ten dairies supplied tuberculous milk. Dr. Schroeder has shown that milk is infected not only when the cow's udder is diseased, but that one tuberculous cow may infect the milk of the entire dairy.

"Milk is frequently infected with living, virulent tubercle bacilli," he writes. "There is nothing hypothetical, circumstantial or inferential about this. It is a fact, a plain, experimentally demonstrated fact." And he adds, after showing how the inhalation theory of human infection has been overestimated: "We must not forget the significant fact that tubercle bacilli in milk are not on floors or on pavements or on places where they may or may not enter our bodies; they are located in articles of food, to be eaten, in most instances, in a raw state, and therefore are inevitably consumed in large quantities."

Every one of these facts has been corroborated by the British commission.

"Every tuberculous cow," says Dr. Woodhead, of that body, "is either an actual or potential center of infection. We cannot get rid of the great white plague until we take bacilli of bovine origin into consideration."

Dr. Latham, the famous London physician, on April 22 wrote me:

"I agree with you that preventive measures are all important with reference to tuberculosis, and have watched your work in connection with the pasteurization of milk with great interest. Unfortunately we at present devote our attention chiefly to an endeavor to deal with those who are already afflicted with tuberculosis, but there are signs that the public is at last waking up to the fact that the only real way of dealing

with the question is a wider one, and that it entails prevention of infection in milk."

In 1895, almost in the beginning of my eighteen years' warfare against tuberculosis, I wrote: "In the near future it will be regarded as a piece of criminal neglect to feed young children upon milk that has not been sterilized." I have demonstrated again and again that pasteurization reduces excessive infantile death rates at least one-half and that it kills the germs of tuberculosis.

Science has amply verified my experience. The Public Health Service thoroughly investigated the whole milk problem and Dr. Wyman and Dr. Rosenau, with their corps of twenty experts, proved beyond dispute that pasteurization does kill the germs of tuberculosis and the other milk-borne infections, without in any way impairing the milk. Dr. Rosenau fixes 20 minutes at 140 degrees Fahrenheit as the minimum for efficient pasteurization.

In the light of these facts I feel that I am amply warranted in urging this association to take the important and necessary step forward and to attack tuberculosis in its citadel — the dairy farm.

The progress hitherto made has been almost entirely in taking better care of the tuberculous patient. Praiseworthy as this is, it is not stamping out tuberculosis. The abolition of this unnecessary disease will begin when it is made a crime to sell milk unless it comes from tuberculin tested cows, or has been properly pasteurized.

Nathan Straus

To Dr. Vincent Y. Bowditch, President.

EXTRACTS FROM LETTERS AND TELEGRAMS.

"I am in hearty sympathy with all the efforts that are being made to control the white plague, by registration, clinics, sanatoria, and by the bettering of conditions of life and toil, but I am more stirred by the practicability of preventing tuberculosis by striking at that prolific cause of the disease — tuberculous milk. Pasteurization is an immediate remedy, capable of instant application, in the dairy, in the creamery, in the plant of the milk distributor, in the home."

— Nathan Straus, in letter to Dr. Leonard Pearson, University of Pennsylvania, February 18, 1909.

"Attack the tubercle bacillus in its stronghold — the dairy farm."

— Nathan Straus, in letter to Newark Committee of 100, March 19, 1909.

"Pasteurization is the factor lacking in much of the work that is now being done to check tuberculosis. Zeal, energy, money, are being expended in this great crusade; the transmission of the disease from one person to another has been reduced to a minimum; sanatoria have been erected all over the country — but that fruitful source of the disease, the tuberculous dairy cow, is all but ignored in this twentieth century warfare against the most terrible foe of mankind."

— Nathan Straus, in letter to Prof. Irving Fisher, March 31, 1909.

"Dr. C. A. L. Reed says preventable diseases kill one person every two minutes. Most of these are germ diseases carried in milk. Pasteurization kills germs, preventing infection. Ohio is mother of Presidents. Will Ohio medical men mother defenceless babies, slain by infected milk, leading great movement to stop this slaughter and abolish tuberculosis by insisting that milk be pasteurized unless cows are tuberculin tested."

— Nathan Straus, in telegram to Ohio State Medical Association, May 6, 1909.

EXTINCTION OF COWS AND MEN.

PAPER BY MR. NATHAN STRAUS PRESENTED TO THE INTERNATIONAL DAIRY CONGRESS, BUDAPEST, JUNE 7, 1909.

TUBERCULOUS cows bear healthy calves and straightway infect them with this disease through the milk that they give to their young, and when the calves are weaned these diseased cows supply the germs of the white plague to the human beings who use their milk. Thus we are inviting the extermination of the dairy industry and of the human race, for this plague is increasing both among cattle and among men, and it will increase like the spreading of a fire so long as the milk swarming with tubercle bacilli is used as food for calves or babies. There is a mathematical certainty as to this fact.

But we need not sit down in stupid helplessness and give tuberculosis undisputed sway on the dairy farm and in the home. We have the tuberculin test to detect the infected animals, and the Bang method of segregating the diseased cows and using those that are only slightly affected to bear calves, which can be brought up without contracting the disease by taking them from the cows and feeding them on pasteurized milk. This will save the dairy herds. And we have the perfectly feasible method of saving the babies by pasteurizing all the milk that does not come from tuberculin-tested herds.

Eighteen years ago I declared that it would soon be regarded as a crime to feed a young child upon milk that had not been pasteurized. I was optimistic. Intelligent farmers now regard it as folly to feed a calf or a pig with unpasteurized milk unless they know by the tuberculin test that the cow is free from tuberculosis, but Chicago is the only city in the world that takes such precautions to save its people from tuberculosis.

To show that he was not exaggerating, Mr. Straus quoted the report of Dr. A. D. Melvin, chief of the American Bureau of Animal Industry, in which he shows that more than 10 per cent. of the dairy cattle are tuberculous and that "this disease is undoubtedly on the increase." Mr. Straus also said that Dr. V. A. Moore had found tuberculosis in 302 herds out of 421 examined, about one-third of the animals being affected. Mr. Straus added:

Yet for the past nineteen years we have had a practically infallible method of singling out the tuberculous cattle. Dr. John R. Mohler, of the American Department of Agriculture, has compiled the records of 24,784 applications of the tuberculin test, and has found that in all but 397 of these cases post-mortem examination showed tuberculosis indisputably.

As for the consequences of dairymen selling tuberculous milk, Mr. Straus pointed out that there had been in New York City in two years an increase of 33 per cent. in the number of new cases of tuberculosis, a fact which the Health Department of the city tried to explain, but did not deny. At this rate, he said, within a generation the great wealth of the American metropolis would be insufficient to provide hospitals for the tuberculous patients.

Mr. Straus said that bovine tuberculosis now costs the American farmer \$14,000,000 a year, and the immediate killing of all the tuberculous dairy cows, if it could be effected, would cost a billion, but that pasteurization would infallibly kill the germs of tuberculosis and all other disease germs that might be in the milk.

NECESSITY FOR PASTEURIZATION OF MILK AND BENEFITS ATTAINED THEREBY.

BY NATHAN STRAUS.

PAPER PRESENTED TO THE INTERNATIONAL CONGRESS OF APPLIED
CHEMISTRY AT LONDON, MAY, 1909.

AN epoch in life-saving is marked by the assembling in London of the 7th International Congress of Applied Chemistry, for the workers in that branch of chemistry which has to do with the purity of foods have won the right to celebrate the triumphs of their science over commercial greed. Even though benzoate of soda seems to be entrenched in the United States behind a referee board, it is Dr. Wiley who has won the real victory, for the American public is with him, and will have none of the preserved foods.

But my interest in the science of applied chemistry is due to the aid given me by your profession in my life-work of saving the lives of babies.

For eighteen years I have done what one man could do to stop the slaughter of children. In 1892 I was convinced that infected milk was responsible for the excessive infantile death rates and for the persistence of tuberculosis among human beings.

Forthwith I proceeded to put pasteurized milk within reach of the children of New York City. Instant was the response in decreased mortality, and conclusive was the demonstration obtained by feeding the city's waifs on Randall's Island with pasteurized milk, resulting in the reduction of the death rate from 44% to 19.8%.

Therefore I proceeded to urge both in America and in Europe the adoption of pasteurization as a practical means of killing pathogenic germs in milk and thereby saving children from disease and death, doing what I could to facilitate the putting of such milk at the disposal of mothers.

Instantly my work was bitterly opposed. In those days I could only point to the babies fed upon pasteurized milk to prove that I was right. Objections to pasteurization multiplied, based entirely upon ignorance or hostility at the idea of a mere layman teaching how to save lives. To all attacks I replied by quoting the advice of that true medical sage, Prof. Abraham Jacobi, for half a century the leading expert on children's diseases, who had guided me in all my work, and by calling upon Dr. Arthur Randolph Green, the medical director of my infant milk stations, to tell exactly how the babies fared who were fed upon pasteurized milk.

However, throughout all these years, with no purpose but to save lives, I was compelled to meet attacks, and the extension of the benefits of pasteurization was hindered everywhere by the noisy clamor of those who did not know and who would not believe. One New York physician went so far as to declare that his clinic was thronged daily with babies who had contracted scurvy or rickets from being fed upon pas-

teurized milk. He was challenged to produce one such case. Dr. Green went to his clinic to see the anomaly. I need hardly tell you that this belligerent doctor failed to show a single such case, nor need I add that he has not yet been silenced by this conviction of lack of veracity.

Such was the condition when applied chemistry stepped in to determine scientifically the value of pasteurization and the true weight of the objections shouted from the house tops by its foes.

I submitted, with perfect frankness, to the Public Health Service of the United States, in 1907, every objection that I had ever heard raised against pasteurization, every alleged disadvantage, every criticism, and I asked nothing but that each of these objections should be carefully considered, and that a true scientific verdict should be rendered.

The result was given to the world last year in the famous Hygienic Laboratory Bulletin No. 41, "Milk and Its Relation to Public Health," which was a complete and thorough vindication of pasteurization, both as showing its necessity and as proving scientifically that the heat necessary to kill the germs of disease does not impair the ferments that assist digestion, does not deteriorate the quality of the milk, does not lessen its food value, does not alter its chemical or physical qualities — but does prevent much sickness and save many lives.

In short, Dr. Rosenau, Dr. Kastle, and the other experts working with the Surgeon General, Dr. Walter Wyman, in the investigation of the milk problem, experimentally demonstrated the scientific correctness of pasteurization as the practical method of making milk safe food, confirming my practical experience of eighteen years in two hemispheres.

I, therefore, take this opportunity to express my sense of the obligation that humanity thus owes to applied chemistry for sweeping away the crude errors that have so long protected the pathogenic germs in milk and thus enabled them to spread disease and death broadcast.

The importance of this addition to the sum of human knowledge can be appreciated only by one who has tried to stand between disease and the babies and to shield them from untimely death.

When the results of this American investigation are properly grasped by the medical profession and by the officers charged with the protection of the public health, and when the fact of the scientific correctness of pasteurization is considered with reference to the relations of bovine and human tuberculosis, as established by the independent investigations made by the British Royal Commission on Tuberculosis and by Drs. Schroeder and Mohler, of the American Department of Agriculture — when these facts are impressed upon the public conscience, it will be held to be a crime to sell milk unless it has been produced under sanitary conditions from tuberculin-tested herds and delivered uncontaminated in sterilized containers, or unless it has been properly pasteurized.

Hundreds of thousands of lives will be saved if this Congress will make a clear and emphatic declaration for pasteurization as the scientifically correct and practically efficient method of saving human beings from tuberculosis and other milk-borne infections. I sincerely hope that the great influence of the International Congress of Applied Chemistry will be exerted in the cause of health and life and against disease and death.

WOMAN'S INFLUENCE.

GREETING TO THE INTERNATIONAL COUNCIL OF WOMEN IN SESSION
AT TORONTO, CANADA, JUNE, 1909.

SO vast is woman's influence, so remarkable have been the achievements of your International Council in organizing that influence for the good of the world, that I wish to add my greetings and good wishes to those messages of congratulation that are telling you how the earnest, thoughtful people of the nations are valuing the efforts of women in the 20th century uplift of humanity.

In the assembling at Toronto of 600 delegates from 23 countries, your Council is showing how formidable is the world-movement of women for the betterment of conditions of life, and I sincerely welcome this evidence of efficient organization, for it is to the women of the world that I look for the adoption and practical enforcement of those measures that I have shown to be necessary for the saving of the lives of the babies and the prevention of tuberculosis.

In my eighteen years' work my greatest encouragement has been the earnest and loyal support of women who have been stirred by true zeal for humanity. I have aroused bitter opposition by teaching the truth that infected milk slays the babies and spreads the Great White Plague. I have only within the past two years broken down the prejudice against pasteurization, compelling recognition of the fact that heating milk for twenty minutes to 157 degrees Fahrenheit kills the disease germs and makes the milk safe food.

But in every crisis in my long campaign against needless sickness and unnecessary deaths, there have been large-hearted and intelligent women who have encouraged me to keep up the battle for the babies.

When medical men would have driven me out of Germany, the Dowager Grand Duchess of Baden, the most beloved royal personage in Europe, the aunt of the Emperor William, came to my support, and pasteurized milk is now saving the lives of the babies in Karlsruhe, Eberswalde and Sandhausen, the infantile death rate in the last town having been cut to half of the average mortality for the preceding five years.

When I became concerned over the ravages of tuberculosis in Ireland I found an enthusiastic ally in Her Excellency, Lady Aberdeen, whose zeal for the welfare of the people is the greatest blessing that Ireland has enjoyed in many years.

These two women are splendid types. The devotion of the people of Germany to the Dowager Grand Duchess of Baden has spread abroad her fame. Lady Aberdeen is personally known to you as your inspiring President whom you have chosen to carry forward your work for another five years. It is by the unselfish labors and enkindling enthusiasm of such women as these that the world is being jogged out of the ruts in which it has been lumbering along and that the day of better things is being hurried to the dawn.

Not only does your organization reach more than a score of nations, but your membership includes many able women who are thoroughly imbued with zeal for humanity. For this reason I trust that your Congress, though dealing with many important subjects, will put in the very forefront the terribly serious question of the world-wide plague of tuberculosis.

You have the power and the influence to make sure and speedy the triumph of mankind over this most deadly foe.

Medical science has done much to diminish the mortality from this disease, by curing incipient cases and by prolonging the lives of those who are hopelessly tuberculous. Sanitary science has reduced to a minimum the danger of the consumptive transmitting the disease to healthy people. But the source of much human tuberculosis has been barely touched.

To achieve success in the warfare against tuberculosis, the watchword of the fight must be "Prevention." The disease will seize its tens of thousands yearly

in each of our great cities and its thousands in the smaller towns and hamlets so long as the milk from tuberculous cows is allowed to implant the live, virulent germs of the disease in human beings. Prevent this daily infection of humanity by pasteurizing all milk that does not come from tuberculin-tested cows, and it is a mathematical certainty that tuberculosis will within a few decades become as rare as small-pox.

No greater blessing could be conferred upon the world by your International Council than the setting forward of such a movement for the real prevention of tuberculosis, and no body is so well equipped in influence and membership to direct the present world-wide agitation against tuberculosis along this line of practical efficiency and certain results.

THE LEAST DREADED DANGER THE GREATEST.

STATEMENT BY NATHAN STRAUS, JUNE, 1909.

OPTIMISTIC predictions of the wiping out of tuberculosis are being made, but optimism doesn't kill the tubercle bacilli. This plague, the most deadly and widespread of any in the history of the world, has its origin in microscopic germs that are lodged in the human system, either by contact with victims of the disease, or by eating the germs in infected food.

I am convinced, from eighteen years' practical experience in fighting this plague, that the source of infection least dreaded is in reality the greatest. Reasonable care on the part of the tuberculosis patient and of those in contact with him reduces to a minimum the danger of personal infection. The germs given off in sputum are so coated by nature with a mucilaginous substance that they must be ground into dust before they can be carried in the air and inhaled, and by this time they are either dead or are so enfeebled that they cannot set up the infection.

But the tubercle bacilli that are contained in milk are alive and virulent, and there is no chance about their entering human bodies — it is a certainty, and the escape of the person drinking such milk depends entirely upon his power of resistance to the infection.

No one would intelligently take poison in his food, but millions are foolhardy enough to try to subsist upon a diet of tubercle bacilli, trusting to luck to resist the infection, and many of the efforts that are now being made to conquer tuberculosis are so narrow in their scope as to ignore this fundamental element of successful warfare — the striking at this common and extensive cause of the disease.

To try to fight tuberculosis without attacking tuberculous milk is like trying to put out a fire by pouring water on another building.

In view of these facts Humanity, looking to the medical profession for guidance, is entitled to the advice that is compelled by present-day knowledge, and you gentlemen, who save so many lives by skill and by patient vigils, can save many more by warning the world that one runs the peril of contracting tuberculosis from milk unless it comes from tuberculin-tested herds, or unless it has been properly pasteurized, so as to assure the killing of the tubercle bacilli.

— Nathan Straus, in letter to The American Medical Association, June 9, 1909.

THE INFECTION OF CHILDREN BY MILK FROM TUBERCULOUS COWS.

REPORT MADE BY MR. NATHAN STRAUS TO THE SEVENTH INTERNATIONAL TUBERCULOSIS CONFERENCE AT STOCKHOLM.

Stockholm, July 8, 1909.

AMERICAN investigations of the responsibility of bovine tuberculosis for the persistent spread of the disease among human beings, particularly children, were officially reported to-day to the Seventh International Tuberculosis Conference, in session here, by Mr. Nathan Straus.

The paper by the New York philanthropist was presented by Dr. Arthur Randolph Green, medical director of the Straus pasteurized milk work, and one of the American delegates. It disclosed for the first time the overwhelming evidence gathered by the American investigators to show the responsibility of milk from tuberculous cows for the infection of human beings with tuberculosis.

Mr. Straus's report was as follows:

MR. STRAUS'S PAPER.

The topic assigned for discussion, the protection of healthy children from tuberculosis, suggests two important and imperative lines of action:

1. That their association, in families or otherwise, with tuberculous patients be safeguarded by sanitary measures.

2. That their infection with bovine tuberculosis be prevented by forbidding the sale or use of milk unless it comes from tuberculin-tested cows, or unless it has been properly pasteurized.

Overwhelming proof of the necessity of stopping the use of tuberculous milk has been supplied, particularly within the past year, by the definite tracing of a large number of cases of human tuberculosis to its bovine origin.

The "Journal of the American Medical Association," in a leading editorial on May 22, pointed out that in over 300 cases investigated bacilli of the bovine type had been found in more than sixty cases, a little more than 20 per cent., and this highest authority among the medical publications of America declared: "Bovine tuberculosis is a source of danger to man sufficiently great to demand rigorous precautionary measures against it."

PROOF OF BOVINE INFECTION.

Quickly following this unanswerable summing up of the situation came the disclosure in the same month of the investigations conducted by Dr. William H. Park, director of the research laboratory of the New York City Health Department. Dr. Park reported to the Association of American Physicians that of seventeen fatal cases of generalized tuberculosis in infants, five were found to be due to bacilli of bovine type. Two cases of abdominal tuberculosis were examined and both were due to the bovine bacillus. In five cases of tuberculosis of the bones and joints and four cases of pulmonary tuberculosis among

babies, the bacilli were of the human type. Of twenty-nine cases of tuberculosis of the lymph glands of the neck nine disclosed bacilli of the bovine type. Dr. Park observed: "Bovine infection is certainly a considerable factor in the tuberculosis of children."

Dr. M. P. Ravenel, of the University of Wisconsin, as early as 1902 refuted the Koch error of 1901 by isolating the bacilli of bovine type in the tissues of a child who died from tuberculosis.

Dr. Theobald Smith, of Harvard, found the bovine germ in four cases. Febiger and Jensen, of Copenhagen, proved that seven of twelve children who died from tuberculosis had been infected by milk, tracing the disease back to tuberculous cows.

The German Imperial Commission, appointed to vindicate Koch, investigated eighty-four cases of tuberculosis in children and found twenty-one, or 25 per cent., of bovine origin. The British Royal Commission established that fourteen out of sixty cases, or 23 per cent., were due to the bovine bacillus.

Thus we have cumulative proof of the responsibility of milk and milk products for the persistent spread of tuberculosis among human beings, and the recent investigations of the American Department of Agriculture have created a strong presumption that the infection has been of bovine origin in many cases other than those in which post-mortem examination discloses bacilli of undoubted bovine type. For Dr. John R. Mohler has proved that the bacillus of bovine type changes to the human type when transplanted into clots of human blood, indicating that the form of the tubercle bacillus is due to the media in which it lives. And Dr. Schroeder says: "If the two types really differ in an important way it is only that the type commoner in cattle is of much higher pathogenic virulence than that commoner in man."

Dr. Mohler's remarkable experiments open an absolutely new line of investigation and suggest as highly probable the hypothesis that the tubercle bacilli of the so-called human type are in many cases really of bovine origin and differ in appearance from the bovine bacilli only because of long residence in the human tissues. This hypothesis should receive the studious attention of investigators.

EXTENT OF DISEASE IN DAIRY HERDS.

Besides the indisputable evidence that bovine tuberculosis is transmitted to human beings, particularly to children, we have to recognize the fact of the extent of tuberculosis among the dairy herds. Dr. A. D. Melvin, chief of the American Bureau of Animal Industry, in his last annual report showed that more than 10 per cent. of the dairy cattle were tuberculous. "This disease is undoubtedly on the increase," he said. Dr. Moore, of Cornell University, found tuberculosis in 302 out of 421 herds examined in New York State, about one-third of the animals being diseased.

It is to be remembered in this connection that Dr. E. C. Schroeder has proved that tuberculous cows, even though but slightly affected, give off tubercle bacilli in their feces, and that the mere presence of a tuberculous cow in a dairy herd may result in the infection of the entire milk supply of that dairy. Dr. Schroeder's conclusions were amply verified and confirmed by the British Royal Commission.

cows that many years must pass before we can reasonably hope to eradicate it, and that in the meantime pasteurization is absolutely necessary for the protection of public health."

Dr. Rosenau, director of the United States Hygienic Laboratory, after a thorough study of the amount of heat necessary to kill the tubercle bacilli, decided that the milk should be heated to at least 60 degrees Centigrade and kept at that temperature for twenty minutes.

VINDICATION OF THE METHOD.

The proof of the correctness of pasteurization of milk as a life-saving measure has been rounded out by Dr. Joseph H. Kastle, chief of the division of chemistry of the Hygienic Laboratory, who has shown that the process, as recommended by the United States Public Health Service, does not impair the ferments or enzymes contained in fresh milk, does not alter the chemical composition of milk, does not lessen its food value, either as to nutrition or digestibility, and does not alter its taste or physical qualities.

This method of destroying the tubercle bacilli in milk, so thoroughly proved and justified by science, has been practically vindicated by my eighteen years' experience in supplying pasteurized milk for the babies in New York and other cities in America and abroad. The result has been that wherever pasteurization has been introduced in cities having excessive infantile death rates, the mortality among the babies has been reduced one-half.

In view of all these facts that I have briefly summarized, the tuberculosis problem resolves itself largely into a milk problem, and the milk problem is not what to do, but how to get it done.

The prevention of the infection of healthy children by tuberculous patients is largely the work of the doctors, and they are quite able to cope with this duty.

ACTIVE CO-OPERATION NEEDED.

The prevention of the infection of healthy children by tuberculous milk requires the active and willing co-operation of the dairyman, the milk dealer, the legislator, the health officer and the doctor. That these men of diverse interests may work together to enforce the pasteurization of milk that is not from tuberculin tested herds requires the earnest endeavors of the organizations that have been formed to fight tuberculosis and the assistance of the pulpit and the press to create such well-informed public sentiment that it will be regarded as a crime to feed a child upon milk unless it has been properly pasteurized.

The progress hitherto made in the fight against tuberculosis has been chiefly in the treatment of the disease, the easing of the sufferings of the hopelessly tuberculous and the curing of incipient cases.

There are indications now that the anti-tuberculosis movement will soon make headway against the plague along the lines of rational and effective prevention. Within the past month the American Association of Physicians and the National Association for the Study and Prevention of Tuberculosis both issued warnings against infected milk as a cause of tuberculosis, the former declaring the sale of such milk criminal, the latter body earnestly commending all efforts to secure, especially for the children, a pure milk supply.

PROGRESS IN AMERICA IN THE FIGHT AGAINST TUBERCULOSIS.

REPORT BY MR. NATHAN STRAUS TO THE VIIth INTERNATIONAL
TUBERCULOSIS CONFERENCE AT STOCKHOLM, JULY 10, 1909.

THE International Congress on Tuberculosis, held in Washington, D. C., September 21 to October 12, 1908, with the most extensive exhibition on the subject ever assembled, had such stirring effect upon the public that there are now enlisted in the fight against the great white plague organizations with a total membership of about 8,000,000 people.

The exhibition continued in Washington three weeks, in New York city seven weeks, and in Philadelphia four weeks, and was seen by 1,600,000 people.

Active campaigns are being conducted in every state, with the support of the newspapers, which devote an average of nearly 200 columns a day to the cause.

There are in the United States 298 sanatoria for the treatment of tuberculosis, 80 having been opened in the past year, and there are 222 dispensaries for the special treatment of tuberculosis, nearly half of them opened within the year.

The National Association for the Study and Prevention of Tuberculosis reports over 2,500 members, 45 per cent. of them laymen. Besides, there are 299 state or local associations devoted to this cause.

The International Congress last October issued the warning: "That measures are to be continued against bovine tuberculosis and that its transmission to man is to be recognized."

The United States Bureau of Animal Industry, under the Secretary of Agriculture, maintains a thorough and efficient meat inspection service, preventing the sale of tuberculous meat.

The federal government lacks power to efficiently protect the milk supplies, but both the Bureau of Animal Industry and the Public Health Service recommend the pasteurization of all milk that is not from tuberculin-tested herds.

The city of Chicago on January 1 put into force a law forbidding the sale of milk or cream unless it has come from tuberculin-tested herds, or unless it has been pasteurized with a sufficient degree of heat for sufficient time to kill all the pathogenic bacteria.

While legislation is pending looking to the pasteurization of the milk supplies of New York city, the Board of Health on June 2 forbade the use of the label "Pasteurized" on milk that has been heated for only a minute or less, after the so-called "commercial" process, but distinctly encouraged proper pasteurization such as kills the tubercle bacilli, fixing the minimum temperature at 140 degrees Fahrenheit and the length of time at at least twenty minutes.

Under the control of medical milk commissions in various cities about 40,000 quarts of certified milk are produced daily.

Infant milk depots, which with few exceptions dispense pasteurized milk in nursing bottles, are maintained in thirty cities in the United States, with the invariable result of preventing sickness and reducing the infantile death rate. At my own stations in New York, founded in 1893, I have dispensed 25,000,000 bottles and 12,000,000 glasses of pasteurized milk.

The practicability of preventing the spread of tuberculosis among children by resort to the tuberculin test in weeding out diseased animals from dairy herds is attracting increased attention, and the city of New Orleans and the town of Montclair, N. J., have led the way in making the test compulsory, while eleven states are actively encouraging the use of the test.

The alternative of pasteurization of milk from untested herds has been adopted by the best milk dealers in a score of cities, the general practice being to heat the milk to 65 degrees centigrade, and hold it at that temperature for half an hour. The so-called "commercial pasteurization," or instantaneous process has been thoroughly discredited as not killing the tubercle bacilli.

The outlook in America is for steady progress in the treatment and care of cases of tuberculosis, with a great extension of the sanatoria system, and for radical and efficient efforts at real prevention by increasing care of the milk supplies and by the more general adoption of proper pasteurization.

TUBERCULOUS MILK.

STATEMENT BY MR. NATHAN STRAUS TO THE ASSOCIATION OF
STATE AND NATIONAL DAIRY AND FOOD DEPARTMENTS, IN
SESSION AT DENVER, AUGUST 21, 1909.

SINCE your last annual meeting very important advances have been made by many of the members of your Association in the protection of the public from the infections that are often carried in milk. Particularly is it true that many of the officials charged with the duty of seeing to the purity of the food supply have taken steps to prevent the sale of tuberculous milk, in order that this universal food may no longer be the means of spreading the Great White Plague.

In Chicago, Dr. Evans, the Health Commissioner, has made a gallant fight for the public health in insisting that milk sold in that city must come from tuberculin-tested herds or must be properly pasteurized. Some twenty other cities are moving along the same lines.

In every case, however, bitter opposition has been the lot of the official who has been so conscientious as to try to save the people of his city from tuberculosis, and those who want no restrictions put upon the sale of tuberculous milk have been diligent in fomenting trouble for such intelligent and right-acting public officials.

The situation is one that cannot fail to merit your attention and to call from your Association a straightforward declaration that will be of practical assistance to these officials and that will encourage others to follow their example in putting up the bars against tuberculous milk.

In cases where the attack is upon the tuberculin test, there is the fact that in 24,784 applications of tuberculin to cattle, there were only 397 errors in the diagnosis. Dr. Mohler, of the Department of Agriculture at Washington, has these records.

In cases where the attack is upon pasteurization, there is the exhaustive investigation by the Public Health Service, which proved both the necessity for pasteurization and the fact that the process in no way impairs the nutritive qualities of the milk or its digestibility.

This verifies the practical experience that I have had through eighteen years in feeding 25,000 babies in New York alone upon pasteurized milk, and in finding that they undoubtedly flourished upon this milk besides being spared diseases they might have contracted from raw milk.

Your Association can render no greater service to the public than by holding up the hands of the officials who are adopting the scientifically justified policy of forbidding the sale of milk unless it comes from tuberculin tested herds or has been properly pasteurized.

This diphtheria epidemic (in Brooklyn) is a serious fact and the only honest, humane way to deal with it is to stop quibbling and explaining and to deal with the live, active germs in the milk supply by pasteurizing the milk.

— Nathan Straus in address before the Chiropean Club, Brooklyn, May 20, 1909.

PREVENTION OF INFECTIOUS DISEASES CAUSED BY MILK.

PAPER SUBMITTED BY MR. NATHAN STRAUS TO THE INTERNATIONAL MEDICAL CONGRESS AT BUDAPEST, AUGUST 31, 1909.

HAPPILY the representative medical associations are on record as frankly recognizing the perils of raw milk and officially recommending the well-proved remedy, namely, the destruction by heat of the disease germs that may be in milk. And science has made rapid progress in verifying the correctness of this wise advice and in adding urgency to the warning that milk should be boiled or pasteurized.

Investigations in all the civilized countries have heaped up irrefutable evidence that infected milk is a frequent cause of infectious diseases, and that pasteurization at not less than 140 degrees, for not less than twenty minutes, thoroughly kills the pathogenic organisms, without in the least impairing the physical qualities of the milk.

Health officers, having become keener in tracing epidemics to their source, have proven that numerous outbreaks of infectious diseases among children have been due to the use of infected milk in the raw state.

Dr. John W. Trask, of the United States Public Health Service, has tabulated the convincing records of 500 such epidemics that have been definitely traced to the milk supply. This list includes 317 milk-caused epidemics of typhoid fever, 125 of scarlet fever, 51 of diphtheria and 7 of epidemic sore throat.

Dr. M. J. Rosenau, director of the Hygienic Laboratory at Washington, who has just been designated the first Professor of Preventive Medicine and Hygiene at Harvard University, made two thorough investigations, case by case, of typhoid fever in the American capital. Rejecting all the instances in which the evidence fell short of actual proof, out of 866 cases in 1906, he found that 85, or nearly 10 per cent., were due to infected milk; while out of 523 cases in 1907, 48, or more than 9 per cent., were definitely traced to infected milk.

Marking all cases, irrespective of their proved origin, on a map of Washington, and tracing thereon the routes of the milk dealers, Dr. Rosenau obtained a remarkably illuminative result. In 1906 there were only 3 cases, and in 1907 only 8 cases on the routes of one of the biggest dealers in the city. Dr. Rosenau gives this explanation:

"This dealer is the only one in Washington who both sterilizes the bottles and pasteurizes the milk. The low typhoid fever rate among his customers is significant and perhaps is a fair index of the result which would be accomplished by the pasteurization of the milk supply."

The pasteurization in this case is not the fraudulent half-minute process called "commercial pasteurization," but consists in heating the milk to 156 degrees Fahrenheit (69 degrees Centigrade) and holding it at that temperature for half an hour.

While practical experience was furnishing this concrete demonstration of the efficacy of pasteurization, Dr. Joseph H. Kastle, the chief

chemist of the Hygienic Laboratory, made a most searching investigation of the effects of heat upon milk. He found that the heat necessary to kill the germs of disease does not impair the ferments that assist digestion, does not deteriorate the physical qualities of the milk, does not lessen its food value, does not alter its chemical constituents.

Wherefore, Surgeon-General Walter Wyman, summing up these and other inquiries, says: "Pasteurization prevents much sickness and saves many lives."

In the face of these practical demonstrations, which coincide exactly with my own experience of eighteen years in supplying pasteurized milk for the babies of New York and other cities, it certainly seems that it should be impossible for crude errors and prejudices to persist and to protect the pathogenic organisms that so often are found in milk, and thus enable them to spread disease and death broadcast.

TUBERCLE BACILLI IN THE MILK SUPPLY.

But there is a reason for pasteurization that is more imperative than the presence in milk of the germs of typhoid or scarlet fevers or diphtheria.

The specific germ that causes tuberculosis is found in much of the milk that is used for human food. In America, only one-tenth of one per cent. of the milk daily sold is certified as free from tubercle bacilli. Conditions are much the same in every country, for bovine tuberculosis exists everywhere except on the Channel Islands, and the susceptibility of cows to this plague increases with the development of their milk-producing capacity.

Dr. John F. Anderson, of the Hygienic Laboratory, found virulent tubercle bacilli in 6.72 per cent. of 223 samples of Washington milk, after the Department of Agriculture had for years been diligently weeding out the tuberculous cows from the dairies supplying the national capital.

Dr. Alfred F. Hess found tubercle bacilli in 16 per cent. of 107 samples of New York milk.

The London County Council last month received a report of the investigation of the milk supply of the British capital, which showed that 12.9 per cent. of 1,217 samples were undoubtedly tuberculous.

These facts would be alarming were they not illuminative. They would inspire terror, did they not point the way to the means of saving the human race from this widespread and ever present peril.

Among scientific men, save the few who in 1901 committed themselves to a hasty assumption, no one now in 1909 doubts the transmission of bovine tuberculosis through the raw products of diseased animals to human beings. Nor does any one, unless similarly committed to some pet error, dispute the certain efficacy of pasteurization as killing the infection, rendering the milk safe, while in no way impairing its food qualities.

It is, in fact, proved, with mathematical certainty, that progress in fighting the Great White Plague depends upon the adoption of methods of evicting the tubercle bacilli from the milk supplies. The elimination of the diseased animals from the herds, it is admitted, will be the work of years, involving the expenditure of many millions. The destruction of the tubercle bacilli in milk is the work of half an hour, the cost trifling.

I will yield to no one in enthusiastic appreciation of the services that medical science is rendering to humanity in improving the treatment of tuberculosis and in reducing the death rate from this disease. In New York City the death rate from this cause fell from 2.42 per 1,000 of population in 1902 to 2.39 in 1907 and 2.29 in 1908, but the number of deaths from tuberculosis in proportion to the total number from all causes remained fairly constant. In 1902, 13.04 per cent. of all the deaths were caused by tuberculosis; the percentage fell to 12.54 in 1904; rose to 13.10 and 13.37 in the next two years; fell to 12.95 in 1907, and rose to 13.90 in 1908.

TUBERCULOSIS IN NEW YORK CITY.

These figures reflect upon the medical profession greater credit than appears upon the surface. This holding in check of the death rate from tuberculosis has been in spite of a very great and alarming increase in the number of new cases of the disease.

The population of New York has increased 26 per cent. since 1902, while the number of new cases of tuberculosis reported in a year has increased 100 per cent. Growth of the city has added 932,291 to the population, while the spread of tuberculosis has added 144,172 to the army of consumptives, until the vast resources of the great metropolis are taxed to the utmost to care for victims of the Great White Plague.

Here are the figures of the new cases of tuberculosis, year by year:

	NEW CASES	PER 1,000 OF POPULATION
1902	12,914	3.55
1903	15,219	4.07
1904	18,723	4.88
1905	20,831	5.18
1906	20,085	4.83
1907	19,725	4.60
1908	23,325	5.27
1909 (half year)	13,350	5.85 (for year)

The cases reported up to July 1, 1909, indicate 26,700 for the year.

These are the official figures of the Health Department and they cannot be successfully disputed. The explanation has been advanced that the doctors have been remiss in past years in reporting cases, and have suddenly begun to do their duty. This I reject as a mean and unmerited attack upon the integrity of the physicians of New York City.

There is no way in which these figures can be shorn of their alarming significance, namely, that the number of new cases of tuberculosis is increasing, in spite of better housing and working conditions. And these figures are paralleled in every other city in which similar data is available.

The logical and inevitable conclusion is that we must go back to the proven source of much human tuberculosis if we are to check the ravages of this plague. We must not stop at protecting the healthy from human infection, but we must save the well from the infection that may lurk unsuspected in raw milk.

If 16 per cent., or even 10 per cent., of the milk sold in New York is tuberculous, can we wonder at 13,350 new cases in the first six months of this year, and can we hope to stop this rapid infection of the population while we are feeding the people upon live, virulent tubercle bacilli?

And are we not, as I said in 1894, guilty of criminal negligence in feeding young children upon milk which has not been sterilized or pasteurized?

One of the foremost authorities in England, Sir James Crichton-Browne, president of the Sanitary Inspectors' Association, has well said:

"The primary and paramount food question is the protection of the milk supply. Suicide, as well as assassination, has to be prevented by the strictest surveillance. The first and fundamental necessity in the protection of life is the application of efficient modern methods of purification to the disease infested milk supply."

It stirs the heart to think of how much sickness and suffering could be prevented by stripping the milk supplies of their power to cause disease and making this universal food of humanity a means of sustenance and health instead of an instrument of disease and death.

If I feel deeply and speak warmly, it is because I have seen results from my work. I have seen the infantile death rate in New York cut down from 96.5 to 54.6 per 1,000 since 1891, coincidentally with the increased use of pasteurized milk in the tenement districts. I have seen the mortality in the infants' asylum at Randall's Island, New York, reduced from 44.36 to 19.80 per cent., with no other change in care or diet than the substitution of pasteurized for raw milk. I have seen the death rate of Sandhausen, Germany, cut to less than half of the average for the preceding five years by no other means than by pasteurizing the milk for the children. I have seen similar saving of life at Eberswalde, near Berlin, with the remarkable record of not a single death of a child fed on pasteurized milk from October, 1908, to July, 1909. Thus I might multiply the evidence by citing the experience of twenty other cities.

THE TRUE WAY TO MAKE NATIONS GREAT.

This International Medical Congress meets at a time when the nations are competing feverishly in building equipment for making war, spending millions upon engines for the destruction of human life.

Your Congress, representing the men throughout the world who are striving to save lives, has the right to urge upon the governments of the world that the true way to make the nations great is to save the resources given them in their children, by protecting them from tuberculosis and the infectious diseases of childhood, by insisting that no milk should be used unless pasteurized or produced from tuberculin-tested herds under sanitary conditions.

Your labors against disease qualify you to insist that every expenditure upon the means to destroy lives in war should be duplicated by the setting apart of like sums for the saving of lives by the prevention of disease.

The advocates of expensive armament justify their programmes by saying that they seek to prevent war. No excuse is necessary for the proposal that like millions at least be spent to prevent sickness and death.

With national resources to support the higher warfare against death, we would soon see real headway in the fight against the great white plague in such a considerable reduction in the number of new cases that humanity would take heart, and thousands would call the International Medical Congress blessed for instituting such an enlightened policy of practical life saving.

THE WHITE PERIL.

BY NATHAN STRAUS.

(Reprinted from "The Delineator," August, 1909)

AMONG all the menaces to humanity—the Black Peril of the plague, the Red Peril of Communism, the Yellow Peril of the fever of the tropics—there is none more grave, more fraught with the possibilities of death, than the White Peril of infected milk. But there is no danger to life more easily averted. Pasteurization renders milk supplies safe.

The White Peril is as closely related as cause and effect to the White Plague that annually exacts the forfeiture of nearly 160,000 lives in this country alone. This fact is now recognized and declared by all impartial and informed scientific men. For the transmission of tuberculosis from the diseased cow to human beings through milk drawn from such animals, is now one of the proved postulates on which rests the hope of intelligently combatting and effectually preventing the disease commonly known as consumption.

It is no longer necessary to recite the evidence, for there is no fact of science more thoroughly demonstrated, and the recent declaration of the International Congress on Tuberculosis has put beyond the sphere of controversy the plain, fundamental truth that it is essential in the warfare against tuberculosis "that measures be continued against bovine tuberculosis and that its transmission to man be recognized."

With the fact of the conveyance of the disease to man by means of infected milk, couple the correlative fact that tuberculosis is epidemic among the dairy herds of the world, as is illustrated by the fact that Dr. Veranus A. Moore found tuberculosis in 302 herds out of 421 examined in New York State; couple these facts and we have ample warrant for describing milk as the White Peril.

Add to this terrifying fact of the potency of milk as a cause of tuberculosis, the knowledge that milk may also carry the infections of typhoid fever, of diphtheria and of scarlet fever, and we have still more overwhelming justification of the designation.

Add yet one more fact, namely, that milk, by the very multitude of the bacteria, or germs, that it often contains, even when these germs are not the specific organisms of infectious diseases, causes disorders in the delicate digestive apparatus of the babies and slays in New York City alone from 200 to 500 children a week by diarrhoea.

Need I cite any more reasons for denominating milk as the White Peril?

THE TOLL OF INFECTIOUS DISEASES.

Carefully compiled vital statistics from a portion of the United States containing in 1906 40,996,317 inhabitants, showed that in that year, in those parts of the country, 75,512 people died from tuberculosis, 13,160 from typhoid fever, 10,793 from diphtheria, 3,227 from scarlet fever, and 42,581 babies under two years were victims of diarrhoea.

These five causes were responsible for 145,273 out of a total of 658,105 deaths from all diseases and accidents. To say that all of these 145,273 deaths were caused by milk, would be going beyond the evidence. But I am quite within the thoroughly proved facts of the case in asserting that infected milk is a common, ordinary cause of these diseases, and that it is fair to attribute a large proportion of these deaths to the use of milk that contained the microscopic germs which produce these diseases.

But the remedy for this frightful slaughter is not to taboo milk. The fluid that the cow secretes is so necessary to man that 40,000,000 quarts of milk are consumed daily in this country alone, besides the enormous quantity that is converted into butter and cheeses. Milk is the one practically universal food of humanity, and the wit of man has not served to discover any substitute.

Nor will I tell you to use what is called Certified Milk, for the simple reason that the total production of that milk in this country is only some 35,000 quarts a day out of the 40,000,000 quarts used every twenty-four hours. This is a liberal estimate, for the reports of the Milk Commissions to the Dairy Division of the Bureau of Animal Industry on Jan. 1, 1907, showed only 24,103 quarts of certified milk handled daily.

Nor will I tell you that the remedy is in inspection of the dairies. Strongly as I believe in inspection, I am compelled as a practical man to recognize that the most thorough and efficient system of inspection can only serve, as the New York Medical Record has sagely put it, "to make milk more fit for pasteurization."

And this brings me to the remedy.

THE REMEDY FOR THE WHITE PERIL.

Pasteurization is a simple, inexpensive, non-patented process by which all milk that is produced under fairly decent conditions may be made safe for human food. The process consists in bringing the milk to a temperature of 157 degrees and maintaining that degree of heat for twenty minutes, so as to kill all the germs of disease. Then the milk is quickly cooled, and it may be used without peril.

It is necessary here to discriminate clearly as to what pasteurization is. The term is correctly applied only to a sufficient application of heat to kill the germs of disease. There is a process described as "commercial pasteurization," which consists in driving the milk rapidly through a heated coil of pipes. The duration of the exposure to the heat is from 40 seconds to a minute and a half. Milk thus treated should in common honesty be labeled NOT pasteurized, for the heat is not sufficient to assure the killing of the germs.

Pasteurized milk is neither cooked nor sterilized. Consequently its taste has not been altered and its digestive and nutritive qualities have not been impaired by the process. It is true that derogatory statements have been made in the past about pasteurized milk, but no one who has read the Public Health Service Bulletin, No. 41, "Milk and Its Relation to the Public Health," ventures to impute any harm to the process of pasteurization, for in that notable volume Dr. M. J. Rosenau, director of the Hygienic Laboratory at Washington, and Dr. Joseph H. Kastle describe in detail the series of experiments by which they were over-

whelmingly convinced that pasteurization does not injure the milk in any way, while it does infallibly destroy the organisms that cause disease.

I may say in passing that every statement that I am making in this article as to the dangers of raw milk and the efficacy of pasteurization is amply warranted by the investigations recorded in this bulletin by eighteen United States Government experts working under the direction of Surgeon-General Walter Wyman, with the sole purpose to ascertain and publish the truth, and by the investigations of Dr. E. C. Schroeder, of the Department of Agriculture.

I, therefore, have the fullest sanction and support of the most unbiased body of able experts in the world for my assertion that the remedy for the White Peril is pasteurization.

I have also the sanction of personal experience for my advocacy of this method of coping with tuberculosis, with the infectious diseases of childhood, and with the intestinal disorders that slay so many babies, for I have been busy these eighteen years in doing what one man can to reduce the death rate among the babies of New York City by supplying pasteurized milk. The fact that some 20,000 babies have been fed on milk from my Infant Milk Depots is one of the reasons why the death rate among the babies of New York has been cut in half since 1893, when I first put pasteurized milk within reach of mothers who wished to save their children.

THE PROOF OF PASTEURIZATION.

To give the exact figure from the official statistics of the city, the infantile death rate of New York dropped from 96.2 per 1,000 in 1892 to 54.6 per 1,000 in 1908, coincident with the increased use of pasteurized milk.

In the last decade I proved the efficacy of pasteurization beyond dispute by installing a pasteurization plant at Randall's Island, New York City, where the city then kept the waifs. The death rate for three years, 1895-7, had been 41.83 per cent. With no other change in diet or care than the substitution of pasteurized milk for raw milk, I reduced the death rate among the children in that institution to an average of 20.75 per cent. for the seven years, 1898-1904, and in the last year the death rate was only 16.52 per cent.

In the past year I have again proved to the world in most indisputable fashion my contention that pasteurization is the remedy for the White Peril.

In Sandhausen, near Heidelberg, Germany, the death rate among children under two years of age was 46 per cent. I supplied pasteurized milk to all the babies of the village. There was no change in any of the other conditions affecting health and life. The result was a cutting down of the death rate to less than half of the average for the preceding five years.

OVERWHELMING SCIENTIFIC AUTHORITY.

In the light of these practical and unanswerable demonstrations, it is hardly necessary to cite scientific authority, but it seems pertinent to quote recent expressions by some of the foremost scientific men of the

world — men who have won confidence by ascertaining and publishing facts, not by setting forth opinions.

Prof. G. Sims Woodhead, of the British Royal Commission on Tuberculosis, lecturing before the Academy of Medicine in New York last October, cited the investigations of the German Imperial Health Office, and said: "This indicates that at least one-fifteenth of the deaths from tuberculosis are due to infection from the cow through milk. We cannot get rid of the great White Plague until we take this fact into consideration. Every tuberculous cow is either an actual or a potential centre of infection."

Dr. E. C. Schroeder, author of "The Unsuspected but Dangerously Tuberculous Cow," and other famous monographs published by the U. S. Department of Agriculture, told the recent International Congress on Tuberculosis that even after the weeding out of tuberculous cows from the herds supplying Washington, one out of every 18 samples of milk examined was found to contain virulent tubercle bacilli, and he showed that conditions were much worse elsewhere. He said "I am convinced that it is imperatively necessary that milk should be pasteurized before it is used in any form as food, unless it is obtained from cows certainly free from tuberculosis and in no manner exposed to tuberculous environment. Pasteurization is the only immediately available, fairly effective expedient."

Dr. Rosenau, in the Milk Bulletin, says: "Pasteurization saves lives and prevents sickness."

Surgeon General Walter Wyman, the foremost plague fighter of modern times, writes: "Pasteurization is forced upon us by present conditions. It prevents much sickness and saves many lives — facts which justify its use under proper conditions."

Dr. Theobald Smith, professor of chemistry at Harvard, a recognized authority in Europe and America, wrote in May, 1907: "The real difficulty of the milk supply is the transmission of specific disease germs which are not easily controlled by any amount of cleanliness, and these specific disease germs, one and all of them, may be destroyed by pasteurization."

But I need not pile up the findings of scientific men and the results of their experience.

My own experience of sixteen years and the results I have achieved only confirm what I wrote in an article in the "Forum" in 1895, quite in the beginning of my propaganda.

BEYOND THE POWER OF ONE MAN.

Pasteurization today is the well-proved and efficient method of combatting the White Peril. The application and enforcement of this method is the duty of municipalities, of the several states and of the Federal Government. It is beyond the power of any one man.

Measures are now pending in Congress looking to the enforcement of the findings of the Department of Agriculture and of the Public Health Service, and after a battle similar to that which resulted in the Pure Food Law, I expect to see legislation that will make it a crime to offer for sale milk that has not been properly pasteurized, unless it comes from cows that have been proved free from tuberculosis and from tuberculous environment, and is handled in such a way as to minimize the dangers of other infections.

I expect also to see all the large cities following the splendid example of Chicago, that on January 1st put into effect an ordinance requiring that all milk offered for sale in the city shall be pasteurized unless coming from cows that have been tested with tuberculin within the year

and that have been proved free from tuberculosis. In establishing this practical system of combatting the White Peril, Dr. W. A. Evans, the Health Commissioner of Chicago, deserves great credit.

I expect also to see the cities of the world recognizing their duty to the babies by establishing Infant Milk Depots, such as those that I am maintaining in New York City and have inaugurated in other cities in this country and abroad. This is quite as much a municipal duty as the providing of pure water.

In this age of vast expenditures from public funds for the protection of the public health, it cannot be believed that there will be much more delay in bringing the power of public resources to bear on the White Peril, especially since the expenditure of comparatively small sums in enforcing pasteurization and in maintaining Infant Milk Depots will relieve the municipalities of much of the heavy cost of caring for the sick who now crowd the public hospitals. It is not exaggerating the facts to say that money invested in pasteurizing milk will pay dividends to the cities by reducing the cost of their charitable institutions.

WHAT OF THE MILK PRODUCER? AND THE CONSUMER?

I am asked in connection with this subject of the White Peril—"What of the farmer?" My answer is that the farmer ought to be the first to unite with those who urge the general adoption of pasteurization. It adds no burden to those that he has to bear. It robs the product of his dairy of its power to kill. It enables him to market his milk while he is gradually weeding out the tuberculous cows from his herd and improving his methods of handling milk. We are rapidly approaching the time when an enlightened public will insist upon conditions of production that will make dairy farming unprofitable, unless the White Peril is removed by pasteurization.

There is one more question. What of the consumer? What are the people to do while the machinery of administration is being assembled and the laws are being framed to save humanity from the White Peril by pasteurization?

My answer is addressed to the mother and housewife. It is this—pasteurize every drop of milk that you give your babies or that you use in your home. The process is simple. Any woman can make safe the supply of milk that she receives daily from the milkman.

THE HOME PASTEURIZER.

It is to meet the needs of people who are not within reach of properly pasteurized milk that I have devised a Home Pasteurizer. Any tinsmith who will make it properly is privileged to copy it, and it can be made for a dollar. It is simply a kettle which can be set upon a table. Into this **BOILING** water is poured up to the level of little brackets that are welded into the sides. The milk is put in bottles, which are held in a rack that rests on the brackets. This keeps the bottles above the level of the water until they are sufficiently heated to prevent cracking. Then the holder is turned so as to clear the brackets and the bottles are immersed in the water, where they remain for twenty-five minutes, which imparts sufficient heat to the milk to assure perfect pasteurization. Then the corks, which have been set lightly in the bottles, are pressed

down; the bottles are cooled rapidly, and are put in the ice box, and the family's milk supply is absolutely safe and free from the germs of disease.

Why need any housewife expose her family to tuberculosis, scarlet and typhoid fevers and diphtheria when one of the chief sources of these diseases can be so easily removed?

In this connection I beg to justify my practical experience by the words of the eminent Harvard professor, Dr. Theobald Smith. When he had examined my Home Pasteurizer at the recent International Congress on Tuberculosis at Washington, Dr. Smith said:

"I am delighted that Mr. Straus has invented a contrivance so simple that any mother can use it and obtain the desired result, namely, the killing of the germs of tuberculosis and other diseases.

"The public should be taught to pasteurize milk in the home, for even if we had herds free from tuberculosis, there would always be the danger of typhoid and other infectious diseases that may be carried in milk."

THE AVERAGE SPAN OF LIFE.

I was told recently by the President of a big insurance company that the average age of man was gradually lengthening. He attributed the fact to the progress made in the past generation by preventive medicine.

"What do you think," I asked, "would be the effect of the general use of pasteurization upon the average age of man?"

"It would make possible the elimination of tuberculosis," he said. "It would save hundreds of thousands of children from the infectious diseases that impair their vitality even if they do not kill. It would wipe out the chief cause of the diseases that are responsible for one-fifth of the deaths."

Then he made some rapid calculations upon the back of an envelope.

"Why," he said in amazement, "I can hardly credit the figures. The average span of life has increased from thirty-three to nearly thirty-five years. Pasteurization of the milk supplies of the country would probably make the average duration of life forty-four years."

It is because pasteurization of the milk supply of the country would so materially reduce infant mortality, as is proven by statistics wherever it has been introduced, and, in the future, so lessen the number of deaths due to consumption, that it would lengthen the average span of life to forty-four years.

THE CITY'S DUTY TO PREVENT TUBERCULOSIS.

New York, October 22, 1909.

The Hon. Members of the Board of Estimate,

New York.

Dear Sirs:

I HOPE that you will earnestly and favorably consider the requests made to your honorable board by the Budget Conference and by the Committee on the Prevention of Tuberculosis for appropriations for the prosecution of a more thorough campaign against tuberculosis.

The amount asked for this purpose for four city departments is less than one-third of one per cent. of the tentative city budget for 1910, and no considerations, such as the making of a showing of economy, can possibly justify the denial of the funds needed for this work.

On the contrary the Board of Estimate would be justified, and would be sustained by the public, if it were to adopt the policy that I have long advocated, and set apart at least one per cent. of the amount of the whole budget for the systematic fighting of this plague that is the greatest menace of mankind at large and of this city in particular.

Such a fund, devoted to real prevention of infectious diseases, would pay dividends to the city in lives saved, in sicknesses avoided, in reduction of the cost of hospital maintenance and in diminution of poverty and human uselessness.

If you will weigh carefully the statement presented to you by the Committee on the Prevention of Tuberculosis, you will be appalled by the seriousness of the situation, and you will feel compelled to allow the funds asked for.

When I presented to the National Association for the Prevention of Tuberculosis, last May, the facts showing the increase of tuberculosis in this city, attempts were made to explain away the alarming condition that I disclosed, but the accuracy of my statement has been so thoroughly vindicated that I feel convicted of moderation.

Practically every organization having to do with the amelioration of the condition of humankind in this city has united in urging the appropriation to city departments of municipal funds wherewith to combat this plague, and you can render no greater service to this city than by acceding to this wise request, and by making your appropriation large enough to include not only the care of those who are now victims of the disease, but also the care of the milk supply, in order that the infection of the healthy by means of tuberculous milk may be stopped. The treatment of tuberculous patients is largely a work of mercy, while the enforced pasteurization of all milk that does not come from tuberculin tested cows is a work of prevention that is imperative if we are to make any real headway in fighting the great White Plague.

Very sincerely yours,

Nathan Straus

I sincerely hope that your good work will be rapidly increased, so as to provide certified milk for all who can afford to pay the price.

But I also hope that your Association will recognize that this work on behalf of the rich does not solve the problem for the poor, who are the inevitable victims of present conditions of milk production and of the present prevalence of tuberculosis in the dairy herds.

— Nathan Straus, in letter to Association of Medical Milk Commissions, June 5, 1909.

THE TUBERCULIN TEST.

New York, Dec. 12, 1909.

The Hon. James Wilson,

Secretary of Agriculture, Washington, D. C.

Dear Mr. Wilson:

ENCLOSED is copy of a letter that I have sent to Congressman Carlin in favor of the bill that proposes to give to your Department power to test cattle for tuberculosis in all the States.

I have long felt that you ought to have this power and that the lack of this authority deprived the entire country of the tremendous benefits that you would confer upon humanity if you had the power and the funds to grapple with bovine tuberculosis on a large scale and in your characteristically vigorous way.

What you have done in dealing with this plague has been wonderful—the more so because the state lines have been barriers to you, while they have not been barriers to the dealers in diseased cattle. I hope that this law will be adopted so that you can do for the dairy interests and for the milk supply what you have done for the packing house industry and the beef and pork supplies in making the meat sold by the butcher safe and free from the germs of tuberculosis.

In addition to this law, it seems to me that there should be a statute making it a penal offense to ship diseased cattle from one state to another. Such a law would clearly be within the rights of the Federal Government, with its undisputed authority over interstate commerce, and it would be a protection to the states that are really trying to stamp out bovine tuberculosis, and a spur to similar action on the part of states that are now negligent of their duty in regard to tuberculosis.

And there should be a law forbidding the sale of milk from untested herds unless it has been properly pasteurized. The experience of Chicago shows that such a law tends to induce the farmers to have their cattle tested and to improve the condition of their dairies. And in the meanwhile the pasteurization of all milk that cannot be certified as free from tuberculosis, will stop the wholesale infection of the human race that is now going on through the careless drinking of raw milk of doubtful origin.

Wishing you all success in the splendid efforts that you are making to protect humanity, I am

Very sincerely yours,

Nathan Straus

THE BRITISH MILK BILL.

The incorporation in your bill of provisions for municipal infant milk depots is admirable. Sooner or later all the civilized countries will see that the conservation of child life and the prevention of disease is a public duty and that there are strong economic reasons for devoting portions of the public funds to this work, and I am glad to see that your far-seeing statesmanship leads you to urge this policy. This is not paternalism, but is a wise measure of national self-preservation, for the outcome of the present struggle of world powers will be the dominance of that nation that offsets diminishing birth rates by diligent preservation of the lives of the babies who are to be the men and women of the future.

— Nathan Straus, in letter to the Hon. John Burns, President Local Government Board, London, June 29, 1909.

TYPHOID EPIDEMIC IN NEW YORK DUE TO RAW MILK.

REPORT BY MR. NATHAN STRAUS TO THE AMERICAN PUBLIC HEALTH ASSOCIATION IN SESSION AT RICHMOND, VA., OCTOBER 22, 1909.

THERE was a milk-borne epidemic of typhoid fever in New York City this summer that merits the attention of your Association.

In the first seven weeks of the summer the number of cases of typhoid averaged 62 a week. In the seven weeks from August 21, the number was 203 cases a week. The total for these seven weeks was 1,424 cases, an increase of 507 cases over the same weeks of 1908, when there was a milk-caused outbreak of 180 cases.

Analysis of the reports showed that 487 of the cases occurred in two wards, there being more typhoid in this restricted area than is usual in the entire city. The localization of the outbreak seemed to vindicate the water supply and to indicate that the cause was infected milk.

Inspection of the milk supply had failed to avert the epidemic or to fix the responsibility, owing to the impossibility of any system of inspection having other than a post-mortem effect upon the milk supply.

One of the large milk distributing concerns that supplied the afflicted section of the city disclosed the source of the epidemic by reporting to the Health Department that the foreman of one of their creameries up state had had a slight case of typhoid fever. Up to this time over 150 cases had developed among the customers of this milk company.

Immediately this company was directed by the Health Department to pasteurize its milk from this creamery, holding the milk at 150 degrees for half an hour. This was done on and after September 10. On October 2 the epidemic ceased. As it requires three weeks for typhoid to develop after the system has been infected, this experience amounts to a mathematical demonstration of the efficacy of pasteurization, and the ceasing of the epidemic coincident with the pasteurization of this milk confirms the tracing of the outbreak to this up-state creamery foreman.

Does not this experience teach with dramatic force the wisdom of the pasteurization of the milk supplies of our cities? Would it not be better to have pasteurization all the time, and not only after hundreds have been stricken with typhoid?

This is a concrete illustration — one of hundreds that have come to my attention in the eighteen years that I have been endeavoring to save people, and especially the babies, from the diseases that are caused by infected milk. The facts in this case have not been disclosed, but I think they ought to be known, as showing how typhoid fever, as well as tuberculosis, diphtheria, scarlet fever, and summer complaint can be prevented by thorough pasteurization of the milk supplies.

THE STRATEGIC POINT OF ATTACK.

New York, March 4, 1910.

Dear Dr. Porter:

IT gives me profound satisfaction to learn that you have arranged a conference next week of health officers and experts to plan for the more efficient defence of the people from preventable diseases.

For all that has been done in recent years in this direction by your department you deserve credit; for your efforts to enlarge this work you deserve heartiest commendation and most earnest support.

When one realizes that sickness is the chief cause of poverty and that fully half of the sicknesses that afflict humanity can be prevented, one is not far from the solution of the problem of how to make this a happier world.

Too long has mankind been content to make the fight against disease in the hospitals and at the bedside, but now the idea is taking shape that the strategic point of attack has been well-nigh ignored. Science has shown that tuberculosis, typhoid and scarlet fevers and diphtheria have their origin in germs, and that these seeds of disease are often implanted in men and women and in helpless, defenceless babies through the drinking of infected milk.

With your practical and expert knowledge of these facts, I earnestly hope that you will bring before the conference measures for the protection of the people of the state from the infectious diseases that are spread by the use of raw milk. While the improvement of the sanitation of dairies and of the methods of handling milk can do much to make it a safer food, there is no security, as Dr. Freeman recently pointed out, in raw milk, but it can be made safe by proper and thorough pasteurization, and thus humanity can be spared the ills that follow the use of infected milk.

Very sincerely yours,

Nathan Straus

Dr. Eugene H. Porter,
Commissioner of Health, Albany, N. Y.

APPEAL TO THE CHICAGO CITY COUNCIL.

(Cablegram from Mr. Nathan Straus from Gibraltar)

Gibraltar, March 27, 1910.

Mayor and City Council, Chicago:

YOUR wireless that efforts are being made in Chicago to repeal the pasteurization regulations greatly distresses me, for I know from nineteen years' experience that pasteurization prevents much sickness and saves many lives, and I know that the repeal of the Chicago ordinance will open the flood gates upon that city and result in the pouring into Chicago of the tuberculous milk that is now barred from other cities in the territory from which Chicago draws its milk supply.

There can be no objection whatever to properly pasteurized milk except that it is easier and cheaper to sell milk in its raw state, with all its power to set up sicknesses and to cause deaths, particularly among the babies. I know from personal experience that 30,000 babies fed from my milk depots have thriven upon pasteurized milk, and that the death rate among children has been cut in half wherever pasteurization has been adopted, and that no ill results whatever have followed the use of pasteurized milk.

Raw milk often slays babies; pasteurized milk saves their lives, for the process robs the milk of any infections that it may contain.

For the sake of the lives of the little ones and to save their mothers from grief and loss, turn a deaf ear to the interested agitation of those who care naught for the babies, and refuse to remove the pasteurization regulation, which is the surest method that can be devised for improving the health of Chicago.

NATHAN STRAUS.

THE CRIME OF TUBERCULOSIS.

BY NATHAN STRAUS.

FOUNDER OF PASTEURIZED MILK DEPOTS FOR INFANTS AND OF
THE TUBERCULOSIS PREVENTORIUM FOR CHILDREN.

(Reprinted from "*The Reform Advocate*," May 21, 1910)

"NO Uncared for Tuberculosis in 1915!" This is the admirable standard of efficiency set for themselves by the members of the National Association for the Prevention of Tuberculosis. Every humane man, who has the right idea of his duty to his fellow men, ought to co-operate, with his time and with his money, to bring to pass the condition signified by this hopeful slogan. The least that we can do for the vast and dismal army of the victims of the Great White Plague is to care for them. And this is the first thing to be done and the least thing that can be done to protect humanity at large from the Plague that slays more men, women and children than any other scourge that ever devastated the world.

I say that this — the care of the victims of tuberculosis — is the **LEAST THING** that can be done, for it is not the only thing that we can do to stop the increase of consumption in our cities and upon our farms.

The care of the victims of tuberculosis is both a human duty and a defensive measure on behalf of the rest of humanity. But we are worse than foolish if we rest content with this work. We are entitled to be set down as lacking in ordinary judgment, if we wait for the plague to strike and then hurry to the bedside to minister to the victim.

If we are in earnest in our warfare and want really to stamp out the plague, and not merely to build great sanatoria and huge hospitals and vast fresh air camps, we must attack the disease in its sources and not merely deal as we can with its effects.

Imagine a general resting idly in his headquarters while the enemy harried his tented army with bullets and sabres, and then fancying that he was fighting for his country by hurrying his wounded soldiers into hospitals.

Yet this is just what we have been doing in the warfare against tuberculosis, and it is because we have been doing this — because we have been content to fight the effects of tuberculosis rather than the causes of the scourge, that we have not checked the spread of the dreaded disease.

It is true that the proper care of the tuberculous patient diminishes the likelihood of his spreading the infection, and to this extent the world-wide campaign against tuberculosis, as conducted during the past ten years, has been preventive.

But it is also true that the vigorous fight that has been made has been at the bedside rather than at the fount and origin of the Great White Plague, and it is because we have neglected potent causes of tuberculosis that I speak of the disease as a crime and a discredit to humanity and to the commonsense and intelligence of mankind.

WHY TUBERCULOSIS IS A CRIME.

If tuberculosis was something that we could not prevent, I would catalogue it as a calamity. Because tuberculosis is a plague that we CAN PREVENT, I denominated it a crime to permit it to continue and to allow it to seize yearly upon hundreds of thousands of new victims, upon young men and old, upon fair maids and matrons, upon helpless babies.

We bitterly deplore the pagan superstition that leads mothers to cast their children into the Ganges, but we permit the criminal negligence that throws the flower of the youth of the civilized world into the relentless grasp of a wasting, terrible disease that is far more cruel and pitiless than the rolling waters of the Ganges.

As long ago as 1894, almost at the beginning of my work, I declared that it was criminal negligence to feed a child upon milk that had not been pasteurized, basing my position upon the fact that raw milk from tuberculous cows was one of the common causes of tuberculosis in human beings.

For years I was bitterly opposed in my work on the ground that there were some among medical men who doubted or denied the transmission of the disease from cow to man through milk. Now there is no doubt and no denial upon the part of any competent scientific man. The position I took in 1894 has been proved by Drs. Mohler and Schroeder of the U. S. Agricultural Department; by Surgeon General Wyman and Dr. Anderson, of the U. S. Public Health Service; by Profs. Rosenau and Theobald Smith, of Harvard University; by Prof. Ravenel, of Wisconsin, and by the British Royal Commission on Tuberculosis, and their proofs have been officially confirmed by the International Tuberculosis Congress and by the National Association for the Prevention of Tuberculosis.

NO JUSTIFICATION FOR DALLYING WITH PERIL.

There remains, therefore, not the slightest color of justification for any further dallying with tuberculous milk, which Prof. Osler, in a recent article in the *Woman's Home Companion*, declares is one of the two great causes of tuberculosis. To permit children to be fed upon live, virulent tubercle bacilli contained in milk is a crime as wanton as the drowning of babies in the Ganges, and a crime far more cruel.

The whole world is aghast at the recent crime of a physician who fed a family upon the germs of typhoid fever. The whole world ought to be aroused to the crime committed hundreds of thousands of times every day — the crime of feeding children upon milk from tuberculous cows.

But how will you know whether the milk is tuberculous or not? I am asked. I will tell you how you can know that it cannot spread the infection. That is by pasteurization. Heat the milk to at least 140 degrees. I prefer 157 degrees, which is the temperature that I use in preparing milk for my infant milk depots. Keep the milk at this temperature for 25 minutes. Cool it quickly. Then you have pasteurized milk, milk that cannot spread tuberculosis, typhoid or scarlet fevers, diphtheria or summer complaint.

When this safeguarding of the milk supplies becomes the rule as it is in Chicago, we will have stopped and abolished one of the great sources of tuberculosis.

THE OTHER MEASURE OF PREVENTION.

There is another important and far-reaching thing that we can do.

There are in every big city hotbeds of tuberculosis — sections in which the people are herded together in infected environments, where the children grow up weak, underfed, susceptible to tuberculosis, almost certainly doomed to become victims of the disease.

Wealth can take these children of the poor and put them for a time in the pure, healthful air of the country, where they can be made strong to resist the plague and can be assured of a fighting chance to live and to be useful, instead of a practical certainty of filling a hospital cot and a consumptive's grave.

This is exactly what I have done with the children whom I have placed in the Cleveland Cottage at Lakewood, and the results of that work have been shown in children gaining weight and strength and health. Of the opposition to that work — of the amazing stand taken by wealth that the poor can have none of their pine air — I need say nothing. The poor will not be shoved off the earth. Humanity will not deny to the little ones of the slums the right to breathe. And this work of rescuing the tenement tots from tuberculosis will go on to the benefit of thousands, and will be a considerable factor in the protection of the rest of humanity from this plague and in the conquering of tuberculosis.

I sincerely hope that the purses of the wealthy will make possible the realization of the laudable ambition of the tuberculosis fighters to have "no uncared-for tuberculosis in 1915." I firmly believe that the honest common sense of the people will insist also that we have no more preventable tuberculosis, that we abolish the drinking of raw milk of doubtful or infected origin, and that we snatch the children of the poor from the cruel grasp of the plague.

When we put a stop to preventable cases of tuberculosis, we will be winning the fight and we will speedily conquer tuberculosis as we have conquered smallpox and yellow fever.

WOMAN'S SPHERE.

BY NATHAN STRAUS.

(Reprinted from Good Housekeeping, September, 1910)

WOMAN'S sphere has broadened, it is true. Within the limits of her own particular field, her home, she has wider and more far-reaching opportunities than in the days of old. Always the guardian of the health of her family, the housekeeper of today can do more to banish disease than her predecessor who wielded broom and scrubbing brush in the pursuit of the virtue of cleanliness.

Modern science has disclosed that it is not so much the dust and dirt that cause sickness as it is the bacterial life in food, and it is in coping with the germs that infest such foods as milk that the modern housekeeper can protect her family from infectious diseases.

These germs of disease are not peculiar to milk, but when they are in other foods they are killed in the cooking, while in drinking raw milk they enter the system alive and with infective power unimpaired. The careful housewife, therefore, sees to it that no raw milk is used. She knows that by boiling the milk she can destroy any germs of tuberculosis, typhoid fever, diphtheria or scarlet fever that may be in the milk. But boiled milk has a cooked taste. Pasteurized milk is not cooked, does not have a "taste," cannot be distinguished from raw milk, but is absolutely safe and free from disease. Housekeepers are learning this, and are taking pains to pasteurize the milk used in their families.

The Home Pasteurizer that I have devised simplifies the process, and I will be glad to send the design to any housekeeper so that she may have her tinsmith make one for her. The process of pasteurization consists in heating the milk to 157 degrees, which does not cook the milk, but does kill the germs that may be in it. The milk is kept at this temperature for twenty minutes, then is cooled quickly, and it is a safe food, fit for human use, capable of nourishing baby or adult, and no longer able to spread disease.

When this practice of pasteurizing all milk becomes the rule, we will see headway made in the fight against the Great White Plague; we will see children spared many of the sicknesses that now claim so many victims; we will see the infant death rate cut down, as has been done wherever my pasteurized milk depots have been established; we will see mothers saved from grief and loss and care and worry. In no way can the housekeeper make more sure and certain her usefulness in her broader sphere as the protector of life.

It is one of the hopeful signs of the times that thoughtful women are earnestly devoting themselves to working out the problems of the conservation of child life, and that so many motherly hearts are bent upon improving the physical, moral and mental condition of the rising generation.

— Nathan Straus, in letter to National Council of Mothers, July, 1909.

SAVING CHILDREN FROM MILK-BORNE DISEASES.

PAPER SUBMITTED BY MR. NATHAN STRAUS TO THE AMERICAN
PUBLIC HEALTH ASSOCIATION IN SESSION AT MILWAUKEE,
SEPTEMBER, 1910.

THE old city of New York (now the Boroughs of Manhattan and The Bronx), has established a record in saving lives of babies. Notwithstanding unusually severe periods of intensely hot weather in the summer of 1909, there were fewer deaths of children under five years than in any preceding summer, and for the first time in the history of the city the summer mortality fell to a rate less than sixty per thousand per annum.

When I first undertook to protect the babies of New York from milk-borne diseases by supplying pasteurized modified milk in 1892, the summer saw the dying of 6,612 children under five years, making the rate per thousand per annum 135.2. With the steadily increasing use of pasteurized milk there has been a steady decline in infant mortality, until the summer of 1909 showed only 4,067 deaths in a population of children larger by 84,000 than that of 1892. In other words, in 1892, 965 children out of every 1,000 survived the summer, while in 1909 there were 985 who escaped death out of each thousand.

That the pasteurization of milk fed to children has been a considerable factor in this achievement none may deny, for the prevention of sickness and death proceeds inevitably from the destruction of the germs that cause illness and that slay the little ones.

These facts are too elementary to be recited before the American Public Health Association. They are set forth fully in the thorough exposition of the milk problem by the Federal Public Health Service in the Bulletin, "Milk and Its Relation to Public Health," which Surgeon-General Wyman summarized in the words, "Pasteurization prevents much sickness and saves many lives."

This epitome of the results of the Federal Milk Investigation ought to be the battle cry of the forces united in the warfare against preventable diseases. Of all preventable diseases the most prevalent are tuberculosis, typhoid and scarlet fevers, diphtheria and the intestinal disorders of infancy; the specific germs of each may be and often are transmitted to the human system in raw milk, and these germs are rendered harmless by proper pasteurization.

We ought to recognize that the disease now attracting so much attention — infantile paralysis — has all the appearance of a germ disease, occurs among infants whose only food is milk, and is probably prevented by pasteurization. I venture this presumption because of the fact that this disease has never occurred among the babies fed upon the milk pasteurized at my laboratories. I submit this fact in the hope that this practical experience may be used to the protection of child life while scientists are engaged in the tedious effort to isolate the germ.

If resort to pasteurization precedes scientific justification in the case of infantile paralysis, this method, as applied to the diseases known to be milk-borne, follows and confirms the discoveries of science.

My recent experience at Sandhausen, Germany, may be cited. The death rate among babies under two years of age had averaged 46 per cent. for five years. I pasteurized the milk for most of the babies, and the death rate fell to less than 20 per cent. I pasteurized the milk for all the babies of the village, and last July there were no deaths at all.

Again at Karlsruhe, instead of 26 per cent. of the babies dying in a year, the rate was reduced to 16 per cent. by pasteurization of the milk fed to about one-fifth of the whole baby population. These children were of the poorer classes, among whom the death rate had been higher than the average for the city. After these babies had been fed upon pasteurized milk the death rate among them fell to less than seven per cent.

All of which confirms and emphasizes the warning uttered by the eminent Prof. Jacobi at a meeting of child-saving agencies at the New York Health Department last spring. He had listened to the broaching of various ideas that had been put forth for approval of the conference. The most important thing, said the greatest authority on the care of infants, is this: "Use no raw milk."

There is no division of science upon this point. No competent authority has ever disputed the fact that pasteurization kills the germs of disease, while it in no way impairs the nutritive value or the digestibility of the milk.

My practical experience in saving children from milk-borne diseases warrants the assertion that the pasteurization of the milk supplies of our big cities, under careful Health Department supervision, would infallibly reduce the number of cases of infectious diseases and save lives of babies.

In no way could the American Public Health Association save so many mothers from bitter grief and loss of their little ones as by hastening the time when efficient pasteurization will be the rule and when the milk-borne diseases will be as rare as the plagues that medical science has practically abolished.

LEAGUE TO FIGHT UNNECESSARY DISEASES.

LETTER TO PROF. J. PEASE NORTON, OF YALE, OCTOBER 22, 1910.

Your plan for organizing the policy holders of America into a league to fight for preventive measures against the unnecessary diseases is admirably conceived. Such a focussing of the influence of so many thousand men and women ought to result in the enactment of the necessary legislation and in the appropriation of the funds required to battle successfully against preventable diseases.

From my long experience in endeavoring to protect the babies from the milk-borne diseases I know how much can be done and how much remains to be done to reduce the morbidity and mortality rates to what they should be in the light of twentieth century knowledge of the causes of sicknesses.

My own campaign has been largely one of education. I have sought to make people understand that raw milk often carries germs of disease and sets up infections, especially in babies. I have demonstrated that the proper pasteurization of milk prevents it being a vehicle for the dissemination of disease, and that the substitution of pasteurized for raw milk prevents much sickness and saves many lives.

In the belief that an organization of the policy holders could do much to compel the righting of these matters, I will be glad to serve on the provisional committee that you are forming.

MUNICIPAL GOVERNMENT AND THE MILK SUPPLY.

PAPER READ BY MR. NATHAN STRAUS BEFORE THE COUNCIL OF ONE
HUNDRED AT NEW HAVEN, CONN., NOVEMBER 14, 1910.

NEW YORK CITY has made a beginning of vast significance. On the last day of October, in apportioning the city revenues for 1911, the Board of Estimate appropriated to the Health Department \$40,000 to inaugurate the pasteurization of milk for infant feeding. This action is significant and prophetic.

It signifies that the greatest city of the world has formally recognized the obligation of the municipality to protect child life from infected milk, and has adopted the method demonstrated by science and practical experience.

And I am convinced that the action taken by the New York City government is prophetic of the time when all well-regulated municipalities will maintain pasteurized milk depots that the babies may live, just as they now have public schools that the children may be trained to be useful citizens.

This step, that I urged as long ago as in 1895, has followed a long period of scientific investigation, practical experimentation and conclusive demonstration.

SCIENTIFIC DISCOVERIES ANTICIPATED.

I began the pasteurization of milk for the New York babies in 1893 before the specific germ of tuberculosis had been isolated. My position then, as expressed in *The Forum* in 1894, was that it was criminal carelessness to give a child milk that had not been pasteurized. It was unthinkable that the milk from tuberculous cows could be used without harm. Yet the amazing denial of an obvious fact by Dr. Koch set back the whole cause of milk reform, and it was not until 1908 that the International Tuberculosis Congress formally discarded the Koch error and declared the truth that bovine tuberculosis is transmitted to human beings — a truth that still excites the hostility of the managers of the National Association for the Study and Prevention of Tuberculosis, though formally declared by resolution at the last meeting of that body in May.

While this fact of the causation of human tuberculosis by tuberculous milk has been in process of indubitable demonstration, the evidence has multiplied that typhoid and scarlet fevers, diphtheria and summer complaint are often caused by the use of infected milk, and the thorough investigation of the milk problem by the United States Public Health Service has left no excuse for the foolish ignorance that tolerates the use of raw milk.

Not only has this investigation shown the large part that raw milk plays in the dissemination of disease, but it has established beyond successful dispute the fact that the heating of milk to a temperature of from 140 to 167 degrees Fahrenheit for a period of from twenty to thirty minutes does not impair the taste, digestibility or nutritive qualities of milk, but does effectually kill whatever germs may be in the milk, and does

thereby "prevent much sickness and save many lives"—to use the words of Surgeon-General Wyman, under whom the investigation was conducted by impartial Federal experts.

PRACTICAL DEMONSTRATIONS.

While scientific men have thoroughly established these facts by investigation and experiments in the laboratory, I have been privileged to demonstrate the correctness of these principles by feeding some 40,000 babies with pasteurized milk, and Mr. Norman B. Mack, writing in the "National Monthly," cited the statement that six million babies had been saved by pasteurization since 1892.

It is not necessary for me to go into the corroborative details of reduced death rates, or to list the records of epidemics stayed by pasteurization. What I wish to emphasize to the Council of One Hundred is the duty and policy of municipalities having recourse to this efficient and reasonable method of reducing the sum total of sickness, especially among the babies, and of saving lives that would otherwise be sacrificed needlessly.

In preventing sickness municipal economy is effected in reducing the cost of hospital maintenance, and much is done to lift the burden of poverty from the poor and the wage-earner, for sickness and death are the chief causes of poverty. Besides this, the prevention of sickness betters the physical quality of the rising generation. Not only will more children survive, but they will be healthier children, better able to earn their own living and to be useful citizens.

And this systematic prevention of sickness and death will lift from many mothers the sorrows and cares that weigh them down and sadden and break their spirits. I have no notion of any Utopia being founded upon this earth, but I do know that the conditions of life, especially among the poor, can be vastly improved by efficient municipal care that every baby be spared the perils of raw milk and be fed only upon milk that has been robbed of its power to set up tuberculosis.

Inspection has been tried and has failed; certification of milk has been tried and a supply of 50,000 quarts a day for the entire country has been the result, the great cost making this a remedy for the rich alone; pasteurization has been proved efficient and the cost so slight as to be negligible in view of the enormous savings of life and the promotion of human good and human happiness.

But the united demands of many people are necessary to bring the public officials of city, state and nation to the point of acting upon this knowledge and requiring the pasteurization of milk that cannot be certified as reasonably likely to be free from germs of disease.

Likewise the united demands of many citizens are necessary to bring the Federal Government to the point of uniting its health agencies in a Federal Department and equipping such a department with power and means for its work. As things go now, the brave men of the Public Health Service, who daily risk their lives in fighting disease, are paid less than any other physicians in the service of the United States, simply because there was no strong public demand to compel Speaker Cannon to allow Congress to vote upon the bill to give these men the same pay as the Army and Navy medical corps.

— Nathan Straus, in letter to Prof. Norton, October 22, 1910.

MY ONE IDEA.

REPLY MADE BY MR. NATHAN STRAUS AT THE BANQUET GIVEN IN
HIS HONOR BY THE CITIZENS OF NEW YORK AT THE
CAFE BOULEVARD ON JANUARY 31, 1911.

YOU have overwhelmed me, my friends, with your kindness, and I cannot make a speech. But before I sit down I want to correct something that has been said. Prof. Jacobi told you that everything that had been done, I had done myself. That is wrong. I never would have been able to do my foreign mission work without the help of Prof. Jacobi himself. When I was in my first year of the work, I came to him. He told me many things about the conditions abroad that were invaluable. And all through the course of the work I went to him for advice, and he was always ready to give it.

My one idea for twenty years has been to save the lives of babies. To this end I have done what I could, and I have sought to incite others to take up this work, and to establish the principle that it is the duty of the public authorities to protect child life.

There have been times of strenuous fighting — times even when I have been on the point of giving up. Then I would get letters from mothers — letters that made me see that I had to go on. It is because the mothers and the babies would not let me stop that I am here tonight.

NOT A PERSONAL TRIUMPH.

It is because the cause for which I have fought has been the cause of the babies that you are here tonight. I do not look upon this demonstration as a personal triumph, but as proof of widespread approval of the principle that the babies must be protected from the preventable diseases that are often conveyed to them in milk.

It is now nearly seventeen years since I wrote in "The Forum":

"I hold that in the near future it will be regarded as a piece of criminal neglect to feed young children upon milk that has not been sterilized. Milk is not always good in proportion to the price paid for it, nor free from the germs of contagion because it has come from cattle of aristocratic lineage. The latter quality, as recent experience has shown, carries with it a special susceptibility to tuberculosis."

I have kept hammering at this idea because I knew that it was the only way to stop the wanton killing of babies. I believe you are here tonight because you know this, too. I believe that you will all help to put this truth into operation. Then you will save thousands of babies. This is why I am grateful for this representative gathering.

THE HOPE OF INTERESTING OTHERS.

The hope of interesting others in this work has always been uppermost in my mind. In 1894, in citing the reduction in the death rate among babies in the first years of my work, I wrote:

"I make these assertions, not for the purpose of claiming a personal credit for a work which has yielded me more pleasure than I can well describe, but with the hope that others may be tempted to enter the same field. It is much too large a field for any one man or organization to fill; it is one in which there may be gathered a most abundant return for well-doing."

And now I am deeply thankful that many others have been led into this field, that plans are under way for the establishment of sixty infant milk depots in this city, that men and women have taken up this work in many other cities both in this country and abroad, that the United States government is about to carry on the work I started in Washington, that the Dowager Grand Duchess of Baden is the enthusiastic patron of the pasteurized milk depots of Karlsruhe, that Lady Aberdeen is providing this means of protecting the babies of Dublin, that municipal milk depots will soon supplement in this city the stations that I am maintaining and those that are to be started by the organization formed by Mrs. J. Borden Harriman.

IT CAN NEVER BE A COMMERCIAL WORK.

This is not and can never be a commercial work. On this point I wrote seventeen years ago:

"Reducing the infantile death rate can be done only by dismissing all considerations of trouble or expense. The work is one in which the only possible gain is that of human lives, but that is a gain to which all commercial and economical considerations must be held to be subordinate."

So, while this work has had a marked effect in improving the quality of the market milk, no improvement in dairy conditions ever has or ever can remove the necessity for pasteurized milk depots, by which alone the babies can be supplied with the modified and pasteurized milk that will protect them from tuberculosis, scarlet and typhoid fevers, diphtheria and summer complaint.

And I beg of you, for the sake of the babies, to sustain every effort that is being made to extend this work, for in so doing you will help to stop the killing of the babies. They can't defend themselves against the milk that kills. We can defend them by seeing that they have the milk that saves — the pasteurized milk that is robbed of power to spread disease and that is properly modified to meet the needs of babies of different ages.

"ABUSE WON'T KILL, BUT RAW MILK WILL."

While I was being bitterly reviled for my work for the babies, I used to say to myself, "Abuse won't kill, but raw milk will." Now I am being praised, and it occurs to me that praise won't save lives, but pasteurization will.

I often think of the saying, "The world is my country; to do good is my religion." This has often been an inspiration to me. I might say, "Humanity is my kin; to save the babies is my religion." This is a religion that I hope will have thousands of followers.

The kinship of the peoples of the world is going to do away with war. But now two billion dollars are spent annually by the civilized nations preparing for war. Seventy per cent. of all national expenditures are for preparations for war or to pay for the results of war.

One per cent. of this yearly outlay would give every baby a fair chance to live. Two billions a year is the cost of means for killing men. Twenty millions would maintain infant milk depots in every city and town. This would check the great white plague that today is the most serious menace of the civilized nations, and would go far toward abolishing the other milk borne diseases.

THE NEW SLOGAN.

In place of the slogans of war, let us cry, "Humanity is my kin; to save the babies is my religion."

I believe this thought is making headway. Your presence here to-night shows this. The years are passing swiftly over my head. Time is beckoning to me. You have encouraged me to do what I can till the light fails.

It is impossible for me to express my appreciation to you and to all the people who have been helpful to me in the past twenty years that I have devoted to the welfare of the babies, but I want to refer to one of the first who encouraged me, sixteen years ago, and to one of the last, who wrote to me only a few weeks ago.

Dr. Jacobi, to whom the whole medical world pays homage, writing to me on June 5, 1895, said:

"It is impossible to statistically count the lives saved by your timely interference. You have benefitted large numbers, and presented an example for grateful imitation in other cities."

In all the years I have tried to live up to this great doctor's estimate of my work, and have found his help and approval a constant source of strength.

Another great man, who is doing more than any other today for the benefit of humanity, John D. Rockefeller, wrote to me last year:

"Your noble example stimulates others to do their best endeavors for the uplift of mankind."

FORGET ME; REMEMBER THE BABIES.

Now, I beg that my personality be forgotten, and that only one fact be considered, namely, that "Pasteurization of milk saves many lives and prevents much sickness." These are the words of Surgeon-General Walter Wyman, in which he summarized the results of the federal investigation of the milk problem ordered by President Roosevelt.

These words, I hope, will serve as the charter for a world-wide movement in behalf of the little ones—a movement that will prevent disease, that will keep the babies in health, that will make secure the future of the nation, that will gladden the hearts of mothers, that will make this world healthier, happier, better.

Forget me; remember the babies.

"The map published this week by the Public Health Service shows most graphically the triumph of modern science over small-pox. The methods have been vaccination and sanitation. Sanitary science has done its best toward the control of tuberculosis, yet the plague persists, with no lowering of the morbidity rate and only small reduction in the mortality rate. I am convinced that the reason there has not been greater progress is the almost universal neglect of bovine tuberculosis as a cause of human tuberculosis."

— Nathan Straus, in letter to Dr. M. P. Ravenel, June 28, 1911.

PREVENTION OF INFANTILE MORTALITY.

PAPER BY NATHAN STRAUS READ BEFORE THE NATIONAL CONGRESS
OF MOTHERS IN SESSION AT WASHINGTON, D. C., MAY 2, 1911.

IF the children of the old City of New York had died in 1910 at the rate of mortality that prevailed in 1891, there would have been 27,339 deaths of children under five years of age. Instead of this there were just 14,672 deaths — a saving of 12,667 lives in one year.

In 1891 there were in the city 188,703 children under five years of age, and 18,224 of them died within the year. In 1910, in the same area, forming the Boroughs of Manhattan and The Bronx in the greater city, there were 283,309 children under five years, and though the number was nearly twice that of 1891, there were only 14,672 deaths — only 80 per cent. as many as in 1891.

Translated into the phraseology of vital statistics, this means that in 1891 the death rate among children was 96.5 per thousand, while in 1910 the rate was only 51.8 per thousand.

These are the figures of Dr. Guilfooy, the registrar of vital statistics of New York City, and I preface my remarks with these figures because this proof of what has been done is the very best answer to the question, "What can be done?"

One of the compelling reasons for the assembling of so many earnest women in this National Congress of Mothers is the alarming fact that the babies of America are not getting that "square deal" that American civilization professes to have for every one. In your proceedings various speakers have named the particular deficiencies of modern life which bear harmfully upon the little ones. I want to name one lamentable defect in our civilization — the neglect of reasonable and proved measures for preventing sickness and death among the babies. That this neglect is well-nigh universal is apparent from the fact that nine or ten babies under one year die in this country in the brief space of twenty minutes.

THE SLAUGHTER OF THE BABIES.

American mothers are bringing babies into the world at the rate of two million a year, but 240,000 of these die within the year of their birth, and 80,000 in their second year, leaving only about three-quarters of the babies to live long enough to get upon their feet and gladden their mothers with their childish prattle.

Two million women each year render to their country that service that no man can ever adequately value, and within two years one out of every seven of these mothers weeps over the lifeless form of her child, and the bit of white ribbon flutters at the door to tell the careless passer-by that we are blundering along the Juggernaut way of modern civilization, leaving the path strewn with the bodies of infants — babies as needlessly slain in many cases as those that the ignorant mothers of India used to throw as sacrifices into the Ganges.

Prof. Fisher has told us what this means in the way of economic waste. Prof. Osler has shown us how unnecessary is this squandering of human life. But no one can make us appreciate the sum total of grief that is told in the fact that 700 mothers in this fair land every day see 700 babies lulled into the endless sleep of death.

The most hopeful fact in this appalling situation is that the women of America are grappling with the problem. When I took up my work for the babies twenty years ago there was little thought given to this subject. I was called an alarmist, when I pointed out that the chief source of excessive infantile mortality was impure milk. One good woman appeared before a public body and seriously upbraided me for slandering that patient and useful animal, the dairy cow.

But Dr. Schroeder, of the United States Agricultural Department, has shown the whole world the unsuspected dangers of the dairy cow, and Dr. Wyman and Dr. Rosenau, with the experts of the Public Health Service, have shown that these dangers may be averted by pasteurization, which, to use their own words, "prevents much sickness and saves many lives."

PROOF THAT BABIES' LIVES CAN BE SAVED.

I will not weary you with the relation of the practical experiences that have demonstrated that the lives of many babies can be saved by proper modification and pasteurization of the milk that is fed to them. It has been pointed out by many observers that the reduction of infant mortality in New York City, year by year, has been coincident with the increase of the output of pasteurized milk from my infant milk depots and with the establishment of like agencies. So impressed is New York with this practical demonstration that the Health Department this year is establishing twelve pasteurized milk depots to supplement the seventeen that I am maintaining, and other agencies are planning to open sixty milk depots.

It is sufficient for me to point out that wherever I have been able to supply the babies with pasteurized milk in place of raw milk, excessive death rates have been cut to less than half what they were before the babies were allowed this chance to live.

In Sandhausen, Germany, the demonstration was particularly conclusive, for there I supplied all the babies of the town under two years of age with pasteurized milk, and the death rate fell to less than half the average for the preceding five years. There was no other change in the condition and diet of the babies, except that they had pasteurized milk in place of raw milk.

In short, it is a matter of practical experience, as well as of scientific theory, that milk may, and often does, carry the germs of such diseases as tuberculosis, typhoid fever, scarlet fever, diphtheria and summer complaint, and my work in various parts of the world has demonstrated that heating the milk destroys these germs without impairing the nutritive qualities of the milk. Pasteurization, as used in my laboratories, consists in heating the milk to 157 degrees and holding it at that temperature for twenty minutes, and then cooling it quickly.

It is because I have saved the lives of babies by this method that I say with all possible emphasis that this is the very most efficacious method of reducing infant mortality.

STAY THE HAND OF THE GRIM DESTROYER.

It would take the entire day for me to summarize in the briefest possible way the evidence proving the perils of raw milk and the saving of babies' lives by pasteurization, and I do not think that it is necessary for me to go at all into these details, for the whole question has passed out of the region of controversy. There is no longer any dispute as to the benefits of the methods that I have demonstrated these twenty years. It is now a question of practical application of the knowledge gained by scientific investigation and by my practical demonstrations, and I hope that every one of the delegates attending this Mothers' Congress will visit the laboratory that I have established in this city and carry home the idea that such an institution is needed in every city and town to stop the present needless slaughter of the babies.

The same saving of babies' lives that has been effected in New York can be accomplished in every city, and what has been done in New York by one man, serving as many babies as he could, will be outdone when all the agencies now at work or getting under way bring the same means of health and life to every baby in the city.

My earnest hope is that this work will be enlarged and extended everywhere until every mother has the chance to see her babies grow up and bless her; until the killing of a baby by infected milk becomes an unknown thing; until the happy laughter of the children ripples unabated in every home, and the grim destroyer is hindered from laying his hands upon the little ones.

Who can estimate the sum of the happiness that can be brought into the world by systematic efforts to bar disease from the homes blessed with babies? Who can tell what it will mean to prevent milk being, as it is now, in most places, the means of spreading tuberculosis, typhoid and scarlet fevers, diphtheria and summer complaint?

Much good is to come to the mothers and to the babies by this Congress. The forming of this organization has marked a new era for the children of the land. Not in one or two directions, but in a multitude of ways childhood has been benefited by the movement so well launched under the inspiring leadership of Mrs. Schoff, and I am glad of this opportunity to wish the National Congress of Mothers all the success that the cause deserves and that the energy of its leaders bids fair to achieve.

But most of all I am glad to say this word to this Congress, in the hope that the advice born of my twenty years' experience will carry through the members of this Congress to all parts of the land that are represented in this gathering, and that it will prevail with health boards and other agencies to the saving of the lives of many babies and to the sparing of many mothers from the grief of parting with their little ones.

REPORT BY NATHAN STRAUS
OFFICIAL DELEGATE ON THE
PART OF THE UNITED STATES ON THE
PROGRESS MADE IN AMERICA IN THE PROTECTION
OF CHILD LIFE.

PRESENTED TO THE
THIRD INTERNATIONAL CONGRESS
FOR THE PROTECTION OF INFANTS.

HELD AT
BERLIN, SEPTEMBER 11-15, 1911.

Mr. President and Members of the Congress:

AT the command of His Excellency, The President of the United States, I am here to present to this International Congress a report of the progress made in America in the protection of the lives of infants and to commend to your attention and approval the methods approved by our scientists and justified by our practical experience.

We have been happy in America in having at the head of our national government and of the bureaus that deal with the public health men who have been impressed with the social and economic importance of the baby, and who have been diligent to exert the powers of government for the protection of infants. Much has been accomplished; more is to be done.

President Taft is determined that the Federal Government shall do its utmost, both to show the local health officers and philanthropic agencies the best ways of protecting the lives of babies, and to carry on active work on their behalf in the protection of the milk supplies and in the promotion of better standards of living.

TO SAVE 125,000 BABIES A YEAR.

The Government has examined with expert ability and care the work in this field of individuals and philanthropic agencies, has made investigations and conducted experiments, and has reached conclusions which are being applied in the confident expectation of saving 125,000 babies' lives annually.

Of 1,324,660 deaths in the United States in 1909, 280,000 were of babies under one year, and 113,000 of these deaths were from intestinal disorders, due to improper feeding, and from infectious diseases, due often to disease germs conveyed to the babies in the milk.

It has been completely demonstrated in the United States that such deaths can be prevented, and that children, by proper nourishment, can be made to withstand other sicknesses of infancy that are not directly

due to impure milk or improper feeding, and this is the basis of the expectation that 125,000 babies can be saved annually.

At the opening of the present century 180 out of every 1,000 babies born in the United States died in their first year; such progress has been made that the average for the decade has been 165 deaths out of every 1,000 births. We expect to reduce the rate to 100 or less.

SYSTEMATIC PROTECTION OF BABIES.

The systematic protection of babies' lives had its beginning in America twenty years ago in the supplying of properly modified and pasteurized milk for infant feeding. It was then that I opened my first infant milk depot in New York City, with the advice and expert co-operation of Dr. Rowland G. Freeman. In 1892 the death rate among children under five years was 96.5 per 1,000; in 1910, in the same area, the rate was 51.8 per 1,000.

This reduction in infantile mortality was coincident with the increase in the number of stations and the output. This year I have eighteen stations, and the municipality and other agencies have increased the total number to eighty-seven. The statistics to date indicate a death rate much lower than any ever recorded in New York.

The credit for the success of this pioneer work is due to the wise guidance and unfailing helpfulness of that prince of savants, Prof. Dr. Abraham Jacobi, whose authority as the greatest of experts on infant feeding is recognized in Europe as well as in America, and who has just been made president of the American Medical Association.

DEMONSTRATION ANSWERED OPPOSITION.

But even though my work had the approval of so eminent a specialist, it encountered bitter opposition at the very start. In an article published in "The Forum" in November, 1894, I stated:

I hold in the near future it will be regarded as a piece of criminal neglect to feed young children upon milk that has not been sterilized (pasteurized). Milk is not always good in proportion to the price paid for it, nor free from the germs of contagion because it has come from cattle of aristocratic lineage. The latter quality, as recent experience has shown, carries with it special susceptibility to tuberculosis.

At first the editors refused to print this statement as being too radical, but as a compromise put it in a footnote. Now this has become the battle cry of this whole campaign.

It was necessary, therefore, to make a demonstration such as could not be had by feeding babies in their homes. New York City at that time cared for its waifs on Randall's Island. In the three years, 1895, 1896 and 1897, out of 3,609 children, 1,509, or 41.81 per cent. died. Without any other change in their diet or regimen, the children in this institution were supplied with pasteurized milk from the same cows instead of the raw milk. The result was that in the next seven years out of 6,200 children only 1,349, or 21.75 per cent., died.

Thus the certainty of this method being efficacious was established. I might recite with cumulative force other facts from my twenty years' experience in this work, but I shall reserve this data for a brief paper that I will submit at another session of this Congress.

WORK OF AMERICAN GOVERNMENT.

Up to 1907, when this Congress met at Brussels, progress had been slow. But the foundation for effective work throughout the United States had been laid by the Public Health Service and the Department of Agriculture.

The former body, in 1907, under the direction of Dr. Walter Wyman, Surgeon-General, made an exhaustive investigation of the milk problem at the direction of President Roosevelt, proved that raw milk was often the cause of tuberculosis, typhoid fever, diphtheria, scarlet fever and intestinal disorders of babies; demonstrated that pasteurization does not impair the nutritive or digestive qualities of milk, and summed up the inquiry with the statement that "Pasteurization prevents much sickness and saves many lives."

Officials of the Agricultural Department, under the leadership of Dr. A. D. Melvin, chief of the Bureau of Animal Industry, formed the Washington Milk Conference, in 1907, and declared that the only milk reasonably safe in its raw state was that from tuberculin-tested cows, produced under sanitary conditions and known as "certified milk," and that all other milk should be pasteurized.

STAND TAKEN BY THIS CONGRESS.

At this juncture this Congress, in session at Brussels, issued the warning:

Milk for children should be boiled, sterilized, or pasteurized — not used in its raw state.

A year later (1908) the Sixth International Congress Against Tuberculosis was in session at Washington, and by reason of the weight of the sound arguments advanced by the American authorities, Ravenel, Schroeder and Mohler, and by Woodhead, of England, declared:

That measures be continued against bovine tuberculosis, and that its transmission to man be recognized.

At this time there were infant milk depots in 21 cities in the United States; now there are such institutions in over 40 cities, and in some of the cities the number of depots and the output of milk have been more than doubled in the three years. The work of these institutions includes instruction in the feeding and care of babies.

TWO GREAT CITIES REQUIRE PASTEURIZATION.

The City of Chicago, with Dr. W. A. Evans as Commissioner of Health, set the example in adopting measures for dealing with the milk supply as a whole by requiring in 1909 the pasteurization of all milk not from tuberculin-tested herds. The death rate for the preceding ten years had averaged 316 to the thousand; in 1909 it fell to 287. As compared with 1908 the lives of 521 babies under one year were saved.

On January 1, 1912, practically the same regulations will be enforced by Health Commissioner Lederle in New York City. Thus the two greatest cities in America will bar from use raw milk except such as has been produced from healthy cattle under exceptionally good conditions.

This stand has been taken by these two cities after years of diligent effort to regulate the milk supplies by inspection alone have proved that

the most careful guarding of the sources of supply is not sufficient to surely exclude the germs of disease from milk.

MUNICIPAL MILK DEPOTS.

Another step in advance has been made by the City of New York in undertaking the establishment and maintenance of municipal milk depots for supplying milk for infant feeding. Fifteen such depots have been established in New York and are now in their first year. This clear recognition of the responsibility of the municipality for the proper feeding of babies is an important gain, and the example set by New York is likely to be followed in many other cities.

Notwithstanding the thorough demonstration of the efficacy of pasteurization, it has been only after much controversy and keen argument that the decision has been reached that safety for the babies can be had only by the application to the milk of sufficient heat to surely kill the disease germs.

In 1904 the New York Milk Committee was formed with a strong disposition among its influential members to fight to the end for that elusive ideal, "clean raw milk." This Committee in 1910 decided officially that two kinds of milk, and only two, were safe for human consumption, namely:

(1) Milk in a raw state produced under sanitary conditions from tuberculin-tested cattle.

(2) All other milk to be thoroughly pasteurized.

The former milk is known as "certified;" it forms one-tenth of one per cent. of the city's daily supply, and its cost is prohibitive except to the wealthy.

DR. ROSENAU ON PASTEURIZATION.

The consensus of American opinion on this point is stated by one of the country's highest authorities on hygiene, Dr. Rosenau, Professor of Hygiene and Preventive Medicine at Harvard University, who as director of the Hygienic Laboratory personally conducted the Federal milk investigation. He says:

Pasteurization is rapidly gaining ground. Raw milk is apt to be dangerous milk. The milk that is not certified or guaranteed as fresh, pure and clean should be heated to at least 140 degrees Fahrenheit for twenty minutes. This in essence constitutes pasteurization, and is the inevitable outcome of the future.

The dangers from raw milk are constantly brought to our notice through epidemics of typhoid fever, scarlet fever, diphtheria and the summer complaints of children. All these and many more infections are carried in milk.

The safeguard is to destroy the infection by the simple process of heating the milk. Pasteurization does not injure the quality of the milk in any way, does not diminish its nutritive value. It saves lives and prevents sickness.

Dr. Lederle, Health Commissioner of New York City, says:

No inspection can make milk entirely safe for infants. Compulsory pasteurization and the classification of all milk will enable us really to safeguard the milk supply.

The Commission on Milk Standards, consisting of eighteen prominent American experts, under the chairmanship of Dr. W. A. Evans, with Dr. Charles E. North as secretary, on May 22, 1911, resolved:

That in the case of inspected milk, or milk produced under careful conditions so far as cleanliness or infectious diseases is concerned, and from tuberculin-tested cattle, pasteurization is optional, otherwise compulsory.

That in the case of all milk not either certified or inspected, as required in these standards, pasteurization is compulsory.

TUBERCULOSIS IN MILK.

Another fact that has made for the pasteurization of milk has been the frequent presence of tubercle bacilli in milk. Dr. Anderson, now director of the Hygienic Laboratory at Washington, examined the milk from 104 dairies, after the Agricultural Department had for years been trying to eradicate tuberculosis from the herds supplying the national capital. He found that eleven of the dairies, more than one in ten, were supplying tuberculous milk to their customers.

A few months ago, in their final report, the British Royal Commission on Tuberculosis, after ten years of study and many experiments, declared without qualification that tuberculosis in cows does cause the same disease in human beings, the infection being transmitted in dairy products. This commission verified in every particular the earlier findings of the investigators of the American Department of Agriculture, Drs. Schroeder and Mohler, and of the independent expert, Dr. Ravenel, president of the National Association for the Study and Prevention of Tuberculosis. Dr. Schroeder says:

The available figures indicate that more than one-quarter of all children under five years of age who show symptoms of tuberculosis owe their diseased condition to milk from tuberculous cows; that more than one-sixth of all children between five and sixteen years of age who show symptoms of tuberculosis owe their infection to tuberculous cows.

PASTEURIZATION RECOMMENDED.

Acting upon the evidence adduced by such eminent investigators, the National Association for the Study and Prevention of Tuberculosis, in session at Denver last June, resolved:

That it has been demonstrated experimentally by bacteriologists of high standing in this and other countries, and by two government commissions, that the bovine tubercle bacillus causes serious and fatal tuberculosis in human beings.

That milk from tuberculous cattle appears to be the medium through which transmission of bovine tuberculosis to human beings most commonly takes place.

That this Association recommends that all cows furnishing milk for human consumption be subjected to the tuberculin test, and that all animals which react to this test be excluded from dairy herds.

That where these measures cannot be efficiently carried out, this Association recommends the efficient pasteurization of milk as a safeguard against the transmission of bovine tuberculosis to mankind.

The way to carry out these recommendations has been cleared. Chicago has vindicated in the courts the right of the health authorities to require pasteurization, and the little town of Montclair, in New Jersey, has established in the courts the right of the Health Board to require the tuberculin test.

A NATIONAL CRUSADE.

While these methods of saving babies' lives have been established by investigation and experience, the work of carrying forward measures for the protection of the baby has assumed the dimensions of a national crusade. The American Association for the Study and Prevention of

Infant Mortality, organized in 1909 under the presidency of Dr. J. H. Mason-Knox, Jr., has become a strong and influential body; the National Congress of Mothers, under the presidency of Mrs. Frederic Schoff, has aroused interest in every part of the land in the care of babies; Child Welfare exhibits in various cities have been of practical educational influence; under the administration of President Taft the Public Health Service has been strengthened and measures are pending to expand this bureau into a National Department of Health, with power to enforce the protection of human life in the various States.

America has emerged from the period of discussion and has entered upon the era of action. Efficient methods have been demonstrated and are now being applied, with ever-increasing effectiveness. The problem of saving the lives of the babies, instead of being complicated, has been found to be very simple. This was illustrated when representatives of various agencies met at the New York City Board of Health. After all the others had elaborated upon what might be done for the babies, the chairman called upon the venerable Dr. Jacobi, who had been a patient listener.

"The most important thing in the care of infants," said the great professor, "is just this, 'Use no raw milk.'"

PREVENTION THE WORD.

I am reminded of a poem that was printed last year in the Virginia Health Bulletin. It began this way:

'Twas a dangerous cliff, as they freely confessed,
Though to walk near its crest was so pleasant.
But over its terrible edge there has slipped
A duke and full many a peasant.
So the people said something would have to be done,
And their projects did not at all tally.
Some said, "Put a fence 'round the edge of the cliff."
Some, "An ambulance down in the valley."
"For the cliff is all right if you're careful," they said,
"And if folks even slip or are dropping
It isn't the slipping that hurts them so much
As the shock down below when they're stopping."
Then an old sage remarked, "It's a marvel to me
That people give far more attention
To repairing results than to stopping the cause,
When they'd much better aim at prevention."

We have been letting babies tumble over the cliff quite long enough. We have fed them with infected milk and have maintained great hospitals to win them back from death's grasp. Now in America we are putting the fence around the top of the cliff. We are beginning to shut off the supplies of raw milk, with their possibilities of disease, and to provide properly pasteurized milk that the babies may live, that their childish prattle may gladden the hearts of mothers that would be bowed with grief but for this precaution.

Prevention is the word that I bring to you from America, and Prevention means Pasteurization. Upon this the health agencies of the United States Government are agreed. I am here to commend to you the results of patient scientific investigation and of years of practical experience, and my message is confirmed by the dean of the American medical profession, Dr. Jacobi, in the words, "Use no raw milk."

TWENTY YEARS' PRACTICAL EXPERIENCE
IN
MODIFYING AND PASTEURIZING MILK FOR
INFANT FEEDING.

BY NATHAN STRAUS

FOUNDER OF INFANT MILK DEPOTS.

PRESENTED AT THE
THIRD INTERNATIONAL CONGRESS
FOR THE PROTECTION OF INFANTS

BERLIN, SEPTEMBER 11-15, 1911.

Mr. President and Members of the Congress:

IT has been my privilege as official delegate to this congress from the Government of the United States to bring to your attention the method that America has found successful in saving the lives of babies. This method has been the modification and pasteurization of milk for infant feeding, the maintenance of infant milk depots, and the instruction of mothers in the feeding and care of their babies.

It was twenty years ago that the appalling waste of child life and the recognition of the perils of raw milk for infant feeding led me to start the first depots in New York City. In my official report to this congress I gave the statistics showing the reduction of the death rate among children from 96.5 per 1,000 in 1892 to 51.8 in 1910. This reduction was steady, the rate going down lower each year, as the number of milk depots and their output increased.

WORK OF VAST POSSIBILITIES.

Almost at the start I recognized the vast possibilities of the work and the fact that it was beyond the power and the means of any one man to fill this field. I sought, therefore, to interest others in the protection of the infants and to arouse the municipalities to their duty to the babies.

Plants that I installed in Philadelphia, St. Louis and Chicago formed in each city the nucleus of work similar to mine in New York, with like results. Beginnings were made in other cities, and finally, in the present year, New York opened the era of municipal milk depots for the babies. in response to popular demand that was incited by the results achieved by my work in that city.

PROPER WORK FOR MUNICIPALITIES.

I need not weary you with the statistics of my American work. The best proof of its success is the recognition, after twenty years, by America's greatest municipality, of the fact that the maintenance of such

pasteurized milk depots is a proper and necessary municipal function. Enlightened public policy has dictated that the babies should be saved from needless sickness and death.

It has been recognized also in New York that this is a proper work of humanity for a church to undertake, the Morningside Presbyterian Church having set the example by establishing an infant milk depot which takes care of 125 babies a day.

In 1908 the Countess of Aberdeen, wife of the Viceroy of Ireland, accepted from me a pasteurization plant which has since been operated by the Women's National Health Association in Dublin, with the result that the death rate among the babies supplied with this milk has been only 55 per thousand, while the mortality among the rest of the babies of Dublin has been three times as great.

BABIES' LIVES SAVED IN BADEN.

The Women's Society for the Care of Infants, of the Grand Duchy of Baden, accepted a similar plant, and it has been operated under the patronage of her Royal Highness the Dowager Grand Duchess Luise. The official report of this work for 1909 shows that the death rate among the babies in the entire city of Karlsruhe was 17 per cent., while among the babies supplied with pasteurized milk the mortality rate was only 6.3 per cent. The report says:

This very remarkable success of feeding with pasteurized milk is to be appreciated more because these children were mostly sick or had become reduced by long sickness before they were brought to us.

In Sandhausen (district of Heidelberg) the demonstration was complete. I began supplying the babies with pasteurized milk in February, 1908. Immediately there was a reduction in the death rate. The average infant mortality for the preceding five years was 46 per cent. With no other change except the substitution of pasteurized milk for raw milk, the death rate fell to less than 20 per cent.

Extending the work so as to supply milk for all the babies in Sandhausen under two years, the record of two months last year, in which there were no deaths at all among the babies, was highly gratifying.

WORK OF TWO NOBLE WOMEN.

Thus with the enthusiastic encouragement of two noble women, the Dowager Grand Duchess of Baden and the Countess of Aberdeen, I have been enabled to make conclusive demonstrations in Germany and in Ireland. The practical experience with pasteurization in the cases I have just cited confirms the conclusions resulting from the work in America, and warrants me in urging upon this congress the duty of encouraging the establishment of pasteurized milk depots.

With the great increase in population and in industry in Germany and other progressive countries conditions have changed so as to make this necessity urgent. Instead of the cows having the benefits of life in the open fields, they are more and more shut up in stables, which increases their susceptibility to tuberculosis. No longer does any doubt exist as to the dangers of raw milk from tuberculous cows; neither can there be any reason to hesitate over adopting that means of safety that is afforded by pasteurization. Moreover, there are the other diseases that

may be transmitted in milk — typhoid fever, diphtheria, scarlet fever and intestinal disorders, and the last is more fatal than any other ailment in babies, causing 37 per cent. of all deaths under one year.

DEMONSTRATION IN WASHINGTON.

My most recent demonstration of the value of pasteurization has been in Washington, where I established a laboratory in 1910, with six sub-stations. The medical director, Dr. Louise Taylor-Jones, kept careful records of the work of the first six months. I quote these significant figures:

Of the 506 babies that were supplied with the milk 57 per cent., or 289, were ill when they were brought to the stations.

Out of the total 51, or 10 per cent., died.

Of the 318 babies that were fed upon the milk for a month or more, long enough for a fair trial, only 20 died. This was 6.2 per cent.

Of the 192 still on the milk at the end of six months all were thriving.

None of the babies who were lost died from intestinal disorders or from infectious diseases.

The period of these observations included the intensely hot summer months, which are particularly severe in Washington.

INFANT DEATH RATES CUT IN HALF.

Summing up my twenty years' practical experience most conservatively, I can state with certainty that excessive infantile mortality has been immediately checked wherever I have supplied pasteurized modified milk, and the rate has been cut down at least to half the average for the preceding five years.

The prevention of sickness among babies is a public duty. This is demanded by humanity and by public policy. Sickness and death are among the chief burdens of the poor and the cause of much poverty. The systematic prevention of the diseases that are caused by impure raw milk will do more than anything else to lift these burdens.

Who can estimate the happiness that can be brought into the world by these means? Who can realize what it will mean to mothers to prevent milk being, as it is now, the means of spreading tuberculosis and other infectious diseases? Blessed is the home in which the prattle of babies is heard. Blessed will this congress be if it promotes measures to prevent the stilling of the voices of the babies in death.

"There is so much to be done to get even a fair start against tuberculosis that the task is appalling. There are, first of all, the victims of the disease pitifully begging alleviation of their sufferings, and this work is so enormous that it is apt to engross time and money, and measures to prevent the disease are apt to become secondary, whereas they should be regarded as of the utmost importance.

"I hope that in your work in Milwaukee you are dealing with what the famous Dr. Osler calls the two great causes of tuberculosis — not only seeking to prevent the spread of the plague through tuberculous patients, but also stopping the other great source of the disease, tuberculosis milk."

— Letter to Milwaukee Tuberculosis Commission, Jan. 24, 1912.

TRIBUTE TO SURGEON GENERAL WYMAN.

LETTER FROM NATHAN STRAUS TO THE AMERICAN PUBLIC HEALTH
ASSOCIATION IN SESSION AT HAVANA, CUBA, DECEMBER 7, 1911.

UNABLE to avail myself of the privilege of attending the sessions of the American Public Health Association, I desire to send my greetings to the far-seeing, public-spirited men who are acting with all their might upon the trite but long-neglected theory that the prevention of disease is a far greater work than the cure of human maladies.

But I would fail in justice if I did not pause in this greeting to pay tribute to the great leader in the work of prevention of sickness, the man whose zeal and diligence developed in the United States an organization for the public good that is destined to save hundreds of thousands of lives—Dr. Walter Wyman, who as surgeon general has wrought into the fabric of our national government a real Public Health Service, while the movement for the formal creation of a national department of health has been advancing in the face of hostile fire.

While Dr. Wyman has died at his post, the organization that he expanded out of the Marine Hospital Corps survives him, equipped with able men, ready to conserve efficiently the health of the nation when Congress gives it the power now lacking in law. Dr. Wyman has in effect created a national department of health. It remains for Congress to define and expand what he has done.

If I were able to attend the sessions of the American Public Health Association, I would call attention to two facts that illustrate one of the things that need to be done to prevent disease.

In Washington, a month after the closing of my laboratory, one of the children, two and a half years old, who had thriven on pasteurized milk, was taken ill with typhoid fever. Investigation showed that the child had been fed on milk supplied by a dealer and labeled "pasteurized." About twenty other cases developed among the customers of this milkman. The milk, of course, had not been pasteurized. It had merely been heated for an instant by the flash process called "commercial pasteurization," against which I issued a warning four years ago, denouncing the process as a fraud and a snare.

The other fact to which I wish to direct the attention of this Association is the evidence recently adduced in Boston that the epidemics of septic sore throat, so common in England and in many American communities, may be due to infection carried in raw milk.

The epidemic in Boston, Brookline and Cambridge affected over a thousand persons, 48 of whom died. The infection was traced to the milk supply of a company that had so carefully inspected the cattle and farms from which the supply was drawn that it was pointed out as an ideal concern. However, inspection broke down and an epidemic resulted.

This proof of the inherent weakness of inspection alone emphasizes Boston's experience in 1907, when that city had 717 cases of scarlet fever traced to one milk supply, and 72 cases of diphtheria due to another dairy. In 1908 the same city had a milk-bourne outbreak of 400 cases of typhoid; in 1910 another scarlet fever epidemic of 842 cases. Dr. C. E. A. Winslow is authority for the statement that over 3,000 cases of epidemic disease have been traced to milk in the immediate neighborhood of Boston in five years.

These facts are but a small part of the cumulative and overwhelming evidence of the necessity for pasteurization of the milk supplies. This precaution is inevitably necessary to deliver the public, and especially the children, from the infections that lurk in raw milk in spite of the most diligent and thorough inspection. The correctness of this position, which I have maintained for twenty years, has been shown by Drs. Wyman and Rosenau in the federal milk investigation.

This policy of prevention has been ably championed by Dr. Woodward in Washington. It has been put in operation by Dr. Evans in Chicago. It has been adopted by Dr. Lederle in New York. I sincerely trust that the American Public Health Association will strengthen the hands of these pioneers and encourage other health officers to follow in their steps, by an unequivocal declaration of the absolute necessity for pasteurization of milk as a fundamental requisite for the guarding of a community from epidemic diseases.

OFFICIAL REPORT

ON THE
THIRD INTERNATIONAL CONGRESS FOR THE
PROTECTION OF INFANTS.

SUBMITTED TO
PRESIDENT TAFT
BY NATHAN STRAUS
OFFICIAL DELEGATE ON THE PART OF THE UNITED STATES.



Nathan Straus

PASTEURIZED MILK LABORATORIES
FOUNDED 1892
348 EAST THIRTY-SECOND STREET, NEW YORK CITY

27 West 72d Street
New York, Dec. 20, 1911

The President,

Washington, D. C.

My dear Mr. Taft:

Pursuant to your instructions I attended the Third International Congress for the Protection of Infants, held at Berlin September 11-16, 1911, as official delegate on the part of the United States. As the representative of America I was accorded marked consideration by Her Imperial Highness, the Empress of Germany, under whose patronage the Congress was held, and she expressed the keenest interest in the efforts that are being made in our country to protect the lives of the infants, and in the efficient work that is being done by your administration to promote the public health.

I had the honor to present to the Congress a report on "The Progress made in America in the Protection of Child Life," and in my individual capacity as a member of the Congress I submitted a brief paper on "Twenty Years' Practical Experience in Modifying and Pasteurizing Milk for Infant Feeding." A copy of each paper is attached to this report.

Particular interest was aroused by my report of the activity of the American Government in investigating the causes of excessive infant mortality and in finding practical methods of preventing unnecessary sickness and death among the babies. The French delegates, coming from a nation that appreciates more keenly than any other the value of an infant life, were particularly ready to commend the able pioneer work of the United States Public Health Service and of the Department of Agriculture. Those of the members of the Congress who were connected with public health agencies in their several countries were familiar with much of the work done by the American Public Health Service.

Some of them took pains to tell me that no reports on public health questions rank higher among experts abroad than the volumes embodying the results of the Milk and Typhoid Fever investigations by the Public Health Service and the monographs by Drs. Schroeder and Mohler on their investigations into the transmission of tuberculosis from cow to man. I found that these two names, with those of Drs. Wyman and Rosenau, were regarded abroad as typical of authority and progress, and as putting America in the very front rank among the nations that are seriously grappling with the problems of the prevention of disease.

So cordial were the expressions of appreciation that I feel warranted in believing that the news of the death of the Surgeon General of the Public Health Service was received with genuine grief in the foreign health offices and that the passing of Dr. Wyman from his sphere of beneficent activity was regarded as a calamity to the world at large.

I attended all the sessions of the Congress and followed the papers and discussions with care, in the hope that I would be able to bring back some practical ideas on the prevention of sickness among infants, for incorporation in the report that you desired me to submit.

But for the most part the papers presented had little to do with the prevention of sickness. Methods of treating the diseases of children were discussed at length, but it would be foreign to your purpose for me to attempt to synopsise the array of cures brought before the Congress.

Neither would it be to your purpose for me to recite the ideas on institutional management put forth at the Congress, or to tell of the papers that dealt with such elementary principles of hygiene as personal cleanliness, or that discussed what nurses ought and ought not to do in the care of babies.

Upon one subject much stress was laid, namely, upon the necessity for accurate and uniform vital statistics. I gathered from the discussions that America is quite abreast of the other nations in the registration of births, deaths and epidemic diseases, and that no government issues better statistical reports than those that are put forth by the U. S. Census Bureau. The extension of the registration area to cover the entire country is greatly to be desired.

That which most impressed me at the Berlin Congress is the vital importance of directing the attention of the world at large and of the health officers of cities and nations to the duty of preventing disease. It seemed significant that delegates from two score nations, representing practically all the civilized world, could meet to discuss "the protection of infants" and devote the bulk of their time to debating what kind of pills to give the babies. The treatment of sick babies can be trusted to the doctors. What is needed is the prevention of sickness.

Infantile death rates the world over are needlessly high, not because of lack of skill on the part of the physicians, but for the simple reason that the babies are recklessly infected with diseases. Efforts to prevent these sicknesses, beyond the elementary expedient of quarantine, are made in only a few cities, and no nation except the United States has, as a nation, attacked the sources of the sicknesses that slay the little ones.

The searching investigations by the Public Health Service and the Agricultural Department have proven that typhoid and scarlet fevers, diphtheria, tuberculosis, sore throat and summer complaint are often caused by raw milk, and that the transmission of these diseases through this common food of babies may be prevented by efficient pasteurization of the milk. I mention this because it illustrates the advanced position of this Government in seeking to prevent disease. The only parallel to these investigations is that conducted by the British Government into the relation of bovine and human tuberculosis, an inquiry that was anticipated at every step by the American Government in the work of Drs. Schroeder and Mohler, and by the independent investigator, Dr. Ravenel, and their findings were verified in every particular by the British Royal Commission on Tuberculosis.

In one other respect America is happily in advance of the times, in having at Harvard University the only scholastic department in the world devoted to the prevention of disease, the chair being occupied by Dr. Rosenau, trained in the Government service and now the foremost exponent of scientific measures to attack sickness at its sources.

I mention these considerations as vindicating the propriety of America taking the lead in the world-wide movement to strike at the roots of disease. To launch such a movement I respectfully suggest to you, as the matured result of my observations at the Berlin Congress and at other similar conventions, that you call an International Congress for the Prevention of Disease.

Such a gathering, held under your patronage, would call together the men in all parts of the world who are fighting the causes of disease, as distinguished from the physicians who are engrossed with combatting the effects of disease.

That there is need for such a congress is illustrated by the fact that there is no international body that gives more than passing attention to the prevention of disease, yet confessedly this is of far greater importance than the doctoring of the sick, for prevention means the delivery of great numbers of people from the whole train of evils that follow the seizure of one of a family with sickness.

It seems to me that by bringing together the great sanitarians, health officers and others identified with the work of prevention, in a congress in which the discussion of methods of treatment would be forbidden, you could bring rich blessings upon the whole world, and could round out the first term of your Presidency by setting in motion influences that would save hundreds of thousands of lives in the years to come.

That there is necessity for conference on methods of preventing disease, has been recognized by the instructive annual conventions of the American Public Health Association, by the periodic conferences of state health officers instituted by the late Dr. Wyman and by the establishment of a section of the American Medical Association for the study of prevention.

This need of the age has been recognized also in the incorporation of the word "prevention" in the titles of associations formed to deal with tuberculosis and infant mortality, but it has been the unfortunate experience of these praiseworthy movements that the vital necessity for prevention has been forced into the background by the eagerness of medical delegates to discuss methods of treatment and by the zeal of professional charity workers to expound their plans of organization and of institutional work.

In order that the subject of the prevention of disease should have the opportunity for discussion that its vast importance demands, it is necessary that this matter be made the sole purpose of a gathering of scientists and publicists, at which no subsidiary issue shall have hearing.

I am sure that it will stir you profoundly to contemplate the good that such a congress could achieve -- the potentiality of such a movement for the benefit of the human race, and I hope that your wise and far-seeing statesmanship, which has made so mightily for the public weal, will dictate the assembling under your inspiring leadership of a congress that will mark an epoch in the promotion of the public health.

Very sincerely yours,



Nathan Straus

NO SAFETY WITHOUT PASTEURIZATION.

STATEMENT BY MR. NATHAN STRAUS AT THE MILK CONFERENCE AT
THE CHARITIES' BUILDING, NEW YORK, JANUARY 22, 1912.

I MUST in all frankness admit that a pure milk cannot be produced except at prices that would be prohibitive to all except the very rich.

My twenty-one years' practical experience proves more than this. It proves that milk that can be depended upon to be pure day after day cannot be produced at any price.

So we are face to face with the necessity for pasteurization no matter what the dairymen do to improve the milk supply.

I learned this when I contracted for a supply of milk for my depots from one of the finest model dairies in the state, where ideal cleanliness was carefully observed. The health department found the milk tuberculous. Fortunately, during the short time that I used this milk all that I received was thoroughly pasteurized.

About the same time one of the finest dairies in the state lost its right to sell its milk as certified. The bacterial counts had run up and examination of the cows showed that they were tuberculous. From the time that tuberculosis invaded the herd until it was discovered, the customers of this dairy had been paying twenty cents a quart for certified milk, trusting to the certificate of the County Medical Society that the milk was free from tuberculosis, and they had been drinking live tubercle bacilli. Pasteurization would have protected them.

My rule has been to buy only certified milk for my depots, as that is the best that can be obtained. But I have insisted that it be thoroughly pasteurized, so as to run no chance of supplying the babies with the live germs of disease.

That I have been right in doing so was again illustrated last week, when the report of the counts of the milk supplied to me showed up to 200,000 bacteria to the cubic centimeter. That is the reason why I always pasteurize and say to all "Pasteurize." There is no safety without pasteurization.

By all means clean up the dairies, test the cattle with tuberculin, promote cleanliness in every way. All this, as the Medical Record said some years ago, will not solve the milk problem, but "will make the milk more fit for pasteurization."

Speaking out of my long experience in preventing the killing of the babies with diseased milk, I say with all deliberation and with all earnestness that it is a crime to talk about "spoiling milk by pasteurization." It is a crime because it misleads the public and it hinders the coming of the day of really safe milk. It is just loose talk, uttered without due thought of the dire consequences.

Exact science and practical experience agree that by pasteurization and only by pasteurization can disease germs be surely destroyed and milk made safe to feed to the babies.

PROGRESS MADE IN AMERICA IN THE PREVENTION OF TUBERCULOSIS

REPORT BY NATHAN STRAUS

OFFICIAL DELEGATE ON THE PART OF THE UNITED STATES
BY APPOINTMENT OF THE PRESIDENT

TO THE

SEVENTH INTERNATIONAL CONGRESS AGAINST TUBERCULOSIS
ROME, APRIL 15, 1912.

Mr. President and Members of the Congress:

THE message with which I am charged by the government of the United States is —

“Prevent tuberculosis. Stop it at its sources.”

My government, as the result of twenty years' investigation, believes that the disease can be checked, controlled and finally practically eradicated. Smallpox, yellow fever and the bubonic plague have been stamped out in America, not by mere treatment of the victims, but by scientific preventive measures that went to the origin of the infections.

Our aim now is to end the ravages of the Great White Plague, and it is my duty as delegate from the government of the United States to report particularly the measures that we believe offer the means and the hope of delivering humanity from this scourge. If any facts are necessary to give urgency to this cause, it should be remembered that at the present rate of infection, one out of every nine persons now living will die from this most terrible of all the plagues that have ever afflicted human kind. Tuberculosis causes 10.7 of all deaths in the United States.

\$14,500,000 FOR ALLEVIATION.

The problems of the treatment of the disease have been admirably handled by the physicians in co-operation with the philanthropic. In the past year \$14,500,000 has been spent in America in combating tuberculosis, two-thirds of this sum being money appropriated from public funds, the rest the contributions of the people.

But the demands for funds to maintain institutions for the tuberculous are breaking the back of philanthropy. Each year the necessities of this work increase, and it becomes more and more difficult to secure adequate means to alleviate the sufferings of the ever increasing army of victims of this dreaded disease.

The growth of the work is illustrated in these figures, compiled by the National Association for the Study and Prevention of Tuberculosis, showing the principal lines of activity for each year since 1905.

These figures show an increase in the number of associations and institutions from 147 prior to 1905 to 1,490 by the end of 1911, a gain of 1,343 in seven years, as shown by the following table:

	Asso- ciations.	Sanitoria and hospitals.	Dispen- saries.	Open Air schools.	Preven- torium.
Founded before 1905.....	18	111	18
“ during 1905.....	15	18	6
“ “ 1906.....	18	16	14
“ “ 1907.....	46	30	45	1	..
“ “ 1908.....	109	45	118	2	..
“ “ 1909.....	167	67	59	10	..
“ “ 1910.....	117	68	62	16	1
“ “ 1911.....	128	96	43	62	..
Totals	618	451	365	91	1

THE TUBERCULOUS PATIENT LESS A MENACE.

The vast work summarized in the above figures has been chiefly one of alleviation, only incidentally tending to prevent tuberculosis. But it is to be recognized that in caring properly for tuberculous victims and in teaching the public the nature and dangers of the disease, much important preventive work has been done, and the tuberculous patient has been made less a menace to the community.

Chief among the measures tending to prevent the spread of the plague from man to man have been these —

- Segregation of patients in the more infectious stages.
- Compulsory reporting of all cases to the health officers.
- Sanitary disposition of sputum.
- Checking of expectoration in public places.
- Disinfection of tenements.
- Letting sunlight into tenements.
- Abolition of the common drinking cup.
- Warfare upon the house fly.
- Teaching the gospel of fresh air.
- Rescuing children from tuberculous environments.
- Open air schools for children susceptible to tuberculosis.
- Tuberculosis exhibitions.

INCREASE IN TUBERCULOSIS.

Though progress has been made, in varying degrees, along all these lines of prevention, I was compelled, two years ago, to present to the National Association for the Study and Prevention of Tuberculosis facts that proved that tuberculosis was steadily increasing in New York City, as shown by the number of new cases reported to the Health Department, and to urge the necessity of resorting to the measures adopted in the first work of prevention undertaken in the United States.

It was in 1892 that I inaugurated this work by supplying pasteur-

ized milk in New York City to protect the babies from infection through the use of tuberculous milk, and in 1894, in "The Forum," I stated:

I hold in the near future it will be regarded as a piece of criminal neglect to feed young children upon milk that has not been sterilized (pasteurized). Milk is not always good in proportion to the price paid for it, nor free from the germs of contagion because it has come from cattle of aristocratic lineage. The latter quality, as recent experience has shown, carries with it special susceptibility to tuberculosis.

INVESTIGATIONS BY THE GOVERNMENT.

It was at about the same time that the United States Government undertook investigations that have resulted in the complete demonstration of the fact that the milk from tuberculous cows is a real and considerable factor in the persistent increase of tuberculosis among human beings.

It was in 1893 that Dr. Theobald Smith and Dr. E. C. Schroeder, of the United States Department of Agriculture, proved the infection of milk with tubercle bacilli, and in the following year they demonstrated the value of the tuberculin test in the diagnosis of bovine tuberculosis.

When Dr. Robert Koch, in 1901, presented his famous assumption of the non-communicability of bovine tuberculosis to human beings, Dr. Schroeder began the series of investigations that established, in 1902, the probability, and in 1905-6, the certainty, that tuberculosis among cattle was a factor in the causation of human tuberculosis. Besides this, he proved a number of facts with regard to the tubercle bacilli, the most important being that the bacilli may lie latent in animal tissues.

TUBERCLE BACILLI IN DAIRY PRODUCTS.

By subsequent investigations Dr. Schroeder demonstrated the mode of infection with tubercle bacilli, the manner in which the bacilli from tuberculous cattle pass into milk and dairy products, the persistence and vitality of the bacilli in milk, butter and cheese.

Meanwhile, Dr. John R. Mohler, of the United States Department of Agriculture, solved the mystery of the apparent difference between tubercle bacilli in bovine and human tissues by showing that the variation was one of form only, and that each morphological type may change to the other when transplanted. Thus he demolished the last prop of those who argued that bovine and human tuberculosis were not the same disease.

Dr. M. P. Ravenel, of the University of Wisconsin, and Dr. Theobald Smith, of Harvard, made the demonstration of the bovine source of much human tuberculosis complete by finding the germs of distinct bovine type in the tissues of children who had been killed by tuberculosis.

AMERICAN INVESTIGATIONS CORROBORATED.

These American investigations were verified in every particular by the independent work of the British Royal Commission on Tuberculosis, as set forth in their reports of 1904, 1907 and 1911.

And Prof. von Behring, the famous discoverer of the antitoxins of diphtheria and tetanus, in the Cassel lecture of 1903, declared:

The milk fed to infants is the chief cause of consumption.

So well established was this fact when the Sixth International Congress Against Tuberculosis met in Washington in 1908 that not even the presence and the dominating personality of Dr. Koch, the discoverer of the tubercle bacillus, could restrain the Congress from dismissing his supposition of 1901 with the declaration that:

Measures are to be continued against bovine tuberculosis, and its transmission to man is to be recognized.

FACT UPON WHICH HOPE OF PREVENTION RESTS.

Thus has been vindicated the absolute truth of the fact upon which rests the hope of preventing tuberculosis, the fact, as now confirmed by Dr. Osler, the famous American whom we have loaned to the University of Oxford, namely —

That the two great causes of tuberculosis are:

The tuberculous patient, and
The tuberculous dairy cow.

Evidence of the prevalence of tuberculosis of bovine source among human beings, particularly among the very young, has multiplied rapidly.

Dr. W. H. Park, director of the Research Laboratories of the New York City Health Department, has found the tubercle bacilli of bovine type in nine out of fifty-four cases of tuberculosis in children over five years and under sixteen. In children under five years he found the bovine germ in twenty-two out of eighty-four cases examined.

On the basis of these studies, Dr. Park estimates that 10 per cent. of all children dying from tuberculosis in infancy die from milk infection.

None may determine in how many of the cases of tuberculosis in infants and adults the bovine source of the disease remains unproved simply because the bacillus has changed its form from the bovine to the human type through residence in human tissues, as Dr. Mohler has proved possible.

DR. SCHROEDER'S WARNING.

The importance of this cause of tuberculosis — raw milk from tuberculous cows — has acquired greater urgency from each investigation. The evidence has been cumulative and can no longer be ignored. The reason for estimating this source of infection as of the greatest importance is thus stated by Dr. Schroeder:

Milk is frequently infected with living, virulent tubercle bacilli. There is nothing hypothetical, circumstantial or inferential about this. It is a fact, a plain, experimentally demonstrated fact.

After showing how the inhalation theory of human infection has been overestimated, Dr. Schroeder writes:

We must not forget the significant fact that tubercle bacilli in milk are not on floors or on pavements or on places where they may or may not enter our bodies; they are located in articles of food, to be eaten, in most instances, in a raw state, and therefore are inevitably consumed in large quantities.

Dr. Sims Woodhead, of the British Royal Commission on Tuberculosis, writes:

Every tuberculous cow is either an actual or potential center of infection. We cannot get rid of the Great White Plague until we take bacilli of bovine origin into consideration.

PREVALENCE OF BOVINE TUBERCULOSIS.

The urgency of these facts is illustrated by the prevalence of tuberculosis among cows and the frequency with which the tubercle bacilli are found in milk and other dairy products.

Dr. Alfred F. Hess, of the Tuberculosis Preventorium for Children, near Lakewood, N. J., in an investigation of the New York City milk supply, found tubercle bacilli in 16 per cent. of 107 samples of milk.

Dr. John F. Anderson, director of the U. S. Hygienic Laboratory at Washington, examining 223 samples from the Washington milk supply, after the Agricultural Department had diligently weeded out tuberculous cattle, found 6.72 per cent. contained tubercle bacilli.

Dr. A. D. Melvin, chief of the Bureau of Animal Industry, in guarding the meat supply of the country in the past year, condemned more than one million carcasses for tuberculosis, or one out of every fifty animals slaughtered.

The persistence of the disease in dairy herds was strikingly proved the past year by the application of the tuberculin test to 8,141 cattle in the herds that supply Washington with milk. Where the animals had not been previously tested, 16.06 per cent. were found tuberculous; where diseased animals had been previously removed from the herds after earlier tests, it was found that an average of 3.95 per cent. of the dairy cows were tuberculous.

This is a world-wide condition — bovine tuberculosis exists in all countries to an alarming extent, except in the Channel Islands, where the tuberculin test is systematically applied and a rigid quarantine is maintained. This is illustrated by the fact that examination of the cattle slaughtered in the Heidelberg district in Germany showed that 46 per cent. were tuberculous.

PASTEURIZATION THE REMEDY.

It is this condition that has made necessary measures to prevent the consumption of live tubercle bacilli by human beings. On this point all the experts of the United States Government are agreed. Their opinion is expressed by Dr. Schroeder in his report on "Milk as a Carrier of Tuberculosis Infection." He writes:

It is a simple matter to destroy tubercle bacilli in milk and cream by pasteurization.

For those who are opposed to pasteurization it may be well to call attention to the fact that the United States Public Health Service has shown anew that the benefits derived from it immeasurably outweigh the disadvantages attributed to it.

It is clearly desirable that milk and cream should either be pasteurized or should be obtained from cows that are known to be free from tuberculosis and are stabled, pastured and milked in a healthful environment.

An exhaustive investigation of the milk problem was made by the Public Health Service in 1907, by a corps of twenty experts under the direction of Dr. M. J. Rosenau, head of the Hygienic Laboratory, now professor of Hygiene and Preventive Medicine at Harvard. This inquiry by impartial scientific men, who had no other object than to ascertain the truth, proved that raw milk was a considerable factor in spreading tuberculosis and other infectious diseases, that pasteurization does effectually prevent milk and other dairy products carrying the infections into the human system, that the process does not impair the taste, digestibility or nutritive qualities of the milk. The report was summed up by the late Dr. Walter Wyman, then surgeon general, in these words:

Pasteurization prevents much sickness and saves many lives.

STAND TAKEN BY THE MEDICAL PROFESSION.

Both in 1910 and in 1911 the National Association for the Study and Prevention of Tuberculosis issued warnings against the use of tuberculous milk. In the resolutions adopted last June, this body declared:

That the bovine tubercle bacillus causes serious and fatal tuberculosis in human beings.

That milk from tuberculous cattle appears to be the medium through which transmission of bovine tuberculosis to human beings most commonly takes place.

That all cows furnishing milk for human consumption be subjected to the tuberculin test, and that all animals which react be excluded from dairy herds.

That where these measures cannot be efficiently carried out, this association recommends the efficient pasteurization of milk as a safeguard against the transmission of bovine tuberculosis to mankind.

The same stand was taken by the highest medical authority in the United States, the American Medical Association, at its annual meeting at Denver, in June, 1911, when its Committee on Standard Measures of Procedure for the Control of Bovine Tuberculosis in Relation to the Milk Supply, decided:

That milk must come from cattle —

Tested once a year with the tuberculin test, or

Subjected to careful physical examination every three months —

Or it must be pasteurized.

In defining pasteurization the Committee on Regulations for the Pasteurization of Milk held that —

The "flash" process is to be condemned.

The "holding" process shall be the only one recognized as efficient.

The milk must be held for twenty minutes at 145 degrees Fahrenheit (63 degrees centigrade), or for five minutes at 160 degrees Fahrenheit (71 degrees centigrade).

In this connection Dr. W. C. Woodward, health officer of the District of Columbia, and secretary of the American Public Health Association, pointed out that it is not possible to rely absolutely on the ratings given dairy farms in the score-card system, for conditions relating to cattle themselves count only 14 points out of 100, so that it would be possible for a dairy to have a good rating with every cow tuberculous.

PASTEURIZATION IN CITIES.

Three cities have made beginnings in the practical application of this method of preventing tuberculosis and other infectious diseases.

Chicago, under the leadership of the then Health Commissioner, Dr. W. A. Evans, began in 1907 to require the pasteurization of all milk not from tuberculin-tested herds. This measure led to the general cleaning up of dairies and the removal of tuberculous cattle from many herds. It has been fought, however, by politicians, who succeeded in invalidating the requirement of the tuberculin test, but the present Health Commissioner, Dr. G. B. Young, is framing new regulations that will compel the pasteurization of milk from untested herds.

In New Jersey, however, the town of Montclair adopted a law requiring the tuberculin test for cattle in herds supplying the town with milk, and after a long battle in the courts, led by M. N. Baker, president of the local health board, the right of a community to thus protect the health of its people has been fully sustained by the highest court.

In Washington the influence of the health officer, Dr. Woodward, has been potent in increasing pasteurization.

In New York City public demand has promoted pasteurization, and now the Health Department has put into force new regulations that are expected to have the effect of compelling the pasteurization of all milk not conforming to high sanitary requirements.

TUBERCULOSIS IN NEW YORK CITY.

It is interesting in this connection to note the record of the number of new cases of tuberculosis reported in New York City in each of the last ten years:

Year.	New cases.	Per 1,000 of population.
1902.....	12,914	3.55
1903.....	15,219	4.07
1904.....	18,723	4.88
1905.....	20,831	5.18
1906.....	20,085	4.83
1907.....	19,725	4.60
1908.....	23,325	5.27
1909.....	25,667	5.62
1910.....	32,065	6.72
1911.....	24,747	4.96

It is significant that the first check in the increase in the number of new cases of tuberculosis occurred in the years 1906 and 1907, following such extensive agitation of the perils of raw milk that some of the dealers began to supply properly pasteurized milk, while many housewives saw to the protection of their households by boiling the milk used in their homes.

Then concerted attacks were made upon pasteurization, a raw milk campaign was conducted by large milk interests, and the rate of increase in tuberculosis went up each year till it reached the high mark of 1910.

The reaction came in the Fall of 1910, with an increase in efficient pasteurization by some dealers, with the practical abolition of the "flash"

process, by which milk was heated for an instant and sold under the label "pasteurized"; there was an increase in home pasteurization; the city and charitable agencies duplicated my system of pasteurized milk depots until there were 78 in operation in 1911, and there was for the year a drop of over 40 per cent. in the number of new cases of tuberculosis.

PASTEURIZE AND THEREBY PREVENT.

Dr. Park has just made known the results of observations made in co-operation with the Rockefeller Institute of Medical Research. The cases of 500 babies were watched, and the results of feeding them with different kinds of milk were observed. Dr. Park reports:

The observations proved that mother's milk is the best milk for a baby and that pasteurized milk is the next best. One group of fifty babies had been given pasteurized milk for three weeks, then half of them were changed to good milk not pasteurized. Eleven of the twenty-five became ill, which proved conclusively the good effect of pasteurization. We discovered that it wasn't the chemical combination of milk that hurt, but the amount of bacteria.

There is little that America can add to the knowledge of methods of preventing the infection of the well by tuberculous human beings, but there is much that America can say to the nations out of its experience and official investigations as to the importance of considering the other great cause of tuberculosis—the use of milk and other raw dairy products from tuberculous cattle. And this is the message that I bring from my government:

Pasteurize and thereby prevent tuberculosis.

THE ONLY GUARANTEE OF SAFETY.

Officially the American government and the American medical profession content themselves with recommending the pasteurization of milk not from tuberculin-tested cattle. Personally I go farther.

Several years ago I contracted for a supply of milk from a model dairy, where the most elaborate and costly system of cleanliness was in vogue. The Health Department found the milk reeking with tubercle bacilli. Fortunately, during the brief time that I used this milk it was thoroughly pasteurized.

About the same time the milk produced under the certification of the New York County Medical Society by one of the most famous dairy farms in the State showed an increase in bacteria, tuberculosis was found in the herd, and it developed that from the unknown date of the invasion of tuberculosis into the herd to its discovery, customers who were paying 20 cents a quart for this milk to be safe from tuberculosis were in reality using tuberculous milk without suspecting their danger. Pasteurization would have protected them.

Several weeks ago the certified milk supplied to my laboratory was found to average 200,000 bacteria to the cubic centimeter before pasteurization. It was practically free from germ life as supplied to the babies at my milk depots after pasteurization.

These personal experiences make me insist that none but certified milk be bought for my infant milk depots, as this is confessedly the best milk that can be obtained; but I know so well the fallibility of this system that I require that every drop of this certified milk be thoroughly pasteurized before being supplied to the babies.

It is from twenty-one years' practical experience that I speak when I commend all efforts to produce clean milk from healthy cows, but recognize that there is really no such thing as raw milk that can be depended upon to be clean and pure and free from disease day after day, even though it be produced with such elaborate precautions that it costs three times as much as the ordinary market milk and is out of the reach of all except the wealthy.

It is because of this condition that I urgently advise that every quart of milk be thoroughly pasteurized, lest by any chance the germs of tuberculosis or other diseases be carried to one of the little ones and his food becomes his death.

This is prevention, practical, vindicated by impartial experts and by twenty-one years' experience.

TUBERCULOSIS PREVENTORIUM FOR CHILDREN.

Besides urging this congress to promote the prevention of tuberculosis by recommending the pasteurization of milk and other dairy products, America offers another idea that has been found wonderfully successful in rescuing from this plague children who are predisposed to tuberculosis or who live in tuberculous environments.

With this object in view I initiated the Tuberculosis Preventorium for Children at Lakewood, N. J., in 1909. Dr. H. M. Biggs, health officer of the City of New York, estimated that there were at that time in the tenements of the city 40,000 children who had been exposed to tuberculosis and who would in all probability fall victims to the plague. There was no institution that offered to them means of escape from the disease.

With the advice of the famous Dr. Abraham Jacobi, the preventorium was planned to give such children life in the open, with pure food, under wise supervision. The institution was moved the following year to Farmingdale, N. J., and permanently established, with the co-operation of philanthropic people, on land given by Arthur Brisbane.

The last annual report shows that of 143 children admitted and staying an average of 106 days, 29 were made entirely well and have probably been permanently rescued from tuberculosis, while 64 were so decidedly improved as to make their escape from the disease likely.

The work has proved that it is possible to snatch children from the certain doom of tuberculosis, to make them well and strong, instead of allowing them to become victims of the plague, and thus to make real headway against tuberculosis, and to make useful, self-supporting citizens of those who would otherwise be public charges. It is a work both of mercy and of wise public economy.

The idea embodied in the preventorium has since been copied in other institutions in America and in foreign countries, and it is reasonable to believe that this movement will have important results in the battle against tuberculosis.

PREVENTION THE WORD.

Both in this work of taking children from tuberculous surrounding, and in pasteurizing the milk supplies so as to stop the infection of the babies with tuberculosis, we have in America methods of prevention that we are earnestly endeavoring to commend to our own people and to the other nations of the world, for we feel that in these measures we have the means by which tuberculosis can be overcome.

What pasteurization has done wherever tried it will do in a larger way when resorted to more generally, and the 40 per cent. drop in tuberculosis in New York City, when only part of the milk supply was pasteurized, will be paralleled and outdone, and we will make headway against the Great White Plague, instead of allowing it to destroy our civilization and our race.

The message that I bring to you is practically the same as that which I carried to Berlin as the delegate from the United States Government to the Third International Congress for the Protection of Infants, except that then I was dealing with all the diseases that are carried in raw milk, and now my subject is the one dread malady that holds all humanity in terror.

This is an age of vast expenditure for battleships and armies. All Europe is staggering under the burden of maintaining huge engines of destruction. With an hundredth part of this outlay the greatest war of all the ages could be fought out; the greatest foe of humanity, tuberculosis, could be conquered. Instead of battlefields strewn with the dead there would be cities, towns and villages made happy by the saving of parents and children, of brothers and sisters, from the dreaded white death.

Prevention is the word that I took to Berlin and that I now bring to Rome, and prevention means pasteurization. Upon this the health agencies of the United States Government are agreed. This stand is indorsed by the National Association for the Study and Prevention of Tuberculosis and by the American Medical Association, and my message is confirmed by the dean of the American medical profession, Dr. Jacobi, in the words, "Use no raw milk."

THE FUNCTION OF VOLUNTARY ORGANIZATIONS IN THE CAMPAIGN FOR THE BETTERMENT OF MILK PRODUCTION AND DISTRIBUTION.

BY NATHAN STRAUS

DELEGATE FROM THE AMERICAN PUBLIC HEALTH
ASSOCIATION AND FROM THE STATE OF NEW YORK

SUBMITTED TO THE

XVTH INTERNATIONAL CONGRESS ON
HYGIENE AND DEMOGRAPHY

WASHINGTON, D. C.

FRIDAY, SEPTEMBER 27, 1912

BEFORE dealing with the subject assigned to me by the committee on program, I must express my deep satisfaction with the action of the organizers of this congress in making the ruling idea and purpose of this great international gathering the **PREVENTION OF DISEASE.**

When I returned from my mission to Berlin, where I represented the United States Government at the International Congress for the Protection of Infants, I was impressed with the idea that great good could be done humanity by a congress devoted, not to the treatment of ailments, but to their prevention, and I embodied this idea in my report to President Taft, with the suggestion that he call such an international congress.

At that time the arrangements for the holding of this congress in America were already under way, and I am happy to see from the program that the active managers of the congress have acted generously upon the President's suggestion that my idea of a great international gathering devoted to the prevention of sickness be applied in the planning of the work of this congress.

I truly believe that many thousands of lives will be saved by the work we are doing here, for, as I stated in the very first article that I wrote upon public health questions a score of years ago,

"One ounce of prevention is worth a ton of cure."

PUBLIC DUTY AS TO MILK SUPPLIES.

I do not for one moment admit that the betterment of milk production and distribution is properly the work of voluntary organizations. It is the duty of the public authorities to see that the milk supplies are pure and wholesome. I have maintained this position from the very beginning of my own work, a score of years ago, and within the last five years it has come to be recognized that the municipality and the State are primarily responsible for the milk supplies.

This was the position I took in my letter to the Mayors of the American cities on June 8, 1895, and in the paper that I submitted at the National Conference of Mayors and Councilmen at Columbus, Ohio, on September 29, 1897, in which I said:

I appeal to you as if you were standing beside a great river in whose current were constantly swept past hundreds of drowning infants. This stream is a very real thing if people would but recognize its existence, and all its yearly tribute of death is paid because of the public neglect of some of the simplest precautions for the saving of children's lives.

You, gentlemen, have the means under your control by which these drowning babies can be saved. I ask you, will you not apply them? Men are found capable of acts of heroism in presence of danger less threatening and less surely fatal.

All that I plead for is the extension of the activity of local Boards of Health in a sphere which is legitimately theirs, but which they have, so far, lacked the conviction and the courage to occupy. I shall not have spoken in vain if I have succeeded in impressing you with the fact that the dictates of humanity and of public duty combine in demanding that this backwardness should exist no longer.

THE ONLY MEANS OF SAFETY.

Three years later, on November 15, 1900, having found by practical experience, extended over nine years, that there was no safety save in pasteurization, in a public appeal I said:

Milk is the one article of food in which disease and death may lurk without giving any suspicion from its taste, smell or appearance.

If the pasteurizing of the entire milk supply were made the function of the municipality, it would be an exceedingly clever business investment, for the money expended would be returned a hundred fold. This is looking at it from a practical, commercial standpoint, besides which, from a humanitarian point of view, the amount of suffering and disease which would be prevented is incalculable.

When the news of a railroad wreck and accompanying loss of life is telegraphed across the continent it is followed by a shudder of horror, and if any life-saving precautions have been lacking there is raised a cry of vengeance against the "soulless" corporation, whose duty it is to provide every safeguard for life.

But what of the thousands of infants whose lives pay the penalty of lack of precaution? No shudder of horror passes over the land; no cry for reform is raised, yet just as surely as the proper precaution would have prevented that railroad catastrophe, just so surely would the lives of the thousands of these helpless infants be saved did our municipal authorities adopt the preventive measures shown to be effective.

It was because the municipal authorities were not alive to their opportunity and their duty that there were place and work for voluntary organizations. It was because individuals and associations took up this work of protecting the babies and prosecuted it with increasing energy and effectiveness year after year that there has at length come a great awakening, and we now have Boards of Health in hundreds of cities more or less effectively working for the betterment of the milk supplies.

And it is because this branch of municipal endeavor is yet new, because the work is only partially done, that there is yet work for the voluntary organizations, both in teaching the municipal authorities what to do and how to do it, and in pushing them on to the full performance of their duty to the babies.

TUBERCULOSIS IN RAW MILK.

When the peril of tuberculosis in raw milk came forcibly to my attention, more than twenty years ago, there was practically no attention paid to this serious menace to humanity. In fact, the very man who had the distinction of isolating the tubercle bacillus scouted the idea that is now proved a fact, and with unscientific recklessness denied, that consumption could be contracted by drinking the milk from tuberculous cows.

Therefore, we had not merely an uninformed public to instruct, but a misinformed public to rescue from a foolish error. The peril of raw milk was a new idea. I was regarded as an alarmist when I wrote in the Forum in November, 1894:

I hold in the near future it will be regarded as a piece of criminal neglect to feed young children upon milk that has not been sterilized (pasteurized). Milk is not always good in proportion to the price paid for it, nor free from the germs of contagion because it has come from cattle of aristocratic lineage. The latter quality, as recent experience has shown, carries with it special susceptibility to tuberculosis.

The time was not ripe, the way had not been paved for official action by the public health authorities to protect the public from dangerous raw milk. My warnings of the perils that lurked in milk were received with incredulity, or with derision, or with open and bitter attacks. But I persisted, with the result that to-day there is practical agreement, almost complete unanimity, on the part of medical men and sanitarians.

DECISION BY EXPERTS.

The years that bridge the space between the warnings that I sounded in the early nineties and the recent report of the Commission on Milk Standards have been for the most part weary, discouraging years; but all that is now a matter of the past, and we have at last the deliberate decision of an able and impartial commission of experts that —

While public health authorities must necessarily see that the source of supply and the chemical composition should correspond with established definitions of milk as a food, their most important duty is to prevent the transmission of disease through milk. This means the control of infantile diarrhoea, typhoid fever, tuberculosis, diphtheria, scarlet fever, septic throat infections and other infectious diseases in so far as they are carried by milk.

Septic sore throat deserves special mention because of the frequency in recent years with which outbreaks of this disease have been traced to milk supplies.

The commission recognizes the magnitude of the milk industry, and that the improvement of milk supplies is primarily an economic problem.

But while the basic problem is economic, and must eventually be solved by commerce, public health authorities must show the way and must establish standards and regulations in the interest of consumers, the value of which even the consumers themselves often fail to appreciate.

While the process of pasteurization is a matter which has attracted a great deal of attention in recent years, the commission has not entered into any discussion of its merits or demerits, but has given it recognition in its classification as a process necessary for the treatment of milk which is not otherwise protected against infection.

The commission thinks that pasteurization is necessary for all milk at all times excepting certified milk or its equivalent. The majority of the commissioners voted in favor of the pasteurization of all milk, including certified. Since this was not unanimous, the commission recommends that the pasteurization of certified milk be optional.

WORK OF NOTABLE VOLUNTEERS.

This much have I quoted from the clear and definite recommendations of the Commission on Milk Standards. This report is the work of a voluntary organization, inspired by a voluntary organization, and summing up in its membership the vast deal of earnest study and practical experience that has been acquired in the great co-operative work of many individuals and associations.

It comes to us with the authority of seventeen able, earnest and eminent men, who have served humanity well, men whose names I recite here as illustrating the great work that has been done by volunteers in this fight that has been so vitally necessary to the protection of humanity and of its most helpless members — the babies:

Dr. W. A. Evans, professor preventive medicine, Northwestern University; health editor Chicago Tribune, Chicago, Ill., chairman.

Dr. B. L. Arms, director of bacteriological laboratory, Department of Health, Boston, Mass.

Dr. John F. Anderson, director of Hygienic Laboratory, United States Public Health Service, Washington, D. C.

Prof. H. W. Conn, director of bacteriological laboratory, Connecticut State Board of Health; department of biology, Wesleyan University, Middletown, Conn.

Dr. E. C. Levy, Health Officer, Richmond, Va.

Dr. A. D. Melvin, Chief of Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C.

Dr. William H. Park, Director of Laboratories, Department of Health of New York City, foot of East Sixteenth street, New York City.

Mr. Raymond A. Pearson, Commissioner of Agriculture, Albany, N. Y.

Dr. M. P. Ravenel, director of Hygienic Laboratory, University of Wisconsin, Madison, Wis.

Prof. M. J. Rosenau, Department of Hygiene and Preventive Medicine, Harvard Medical School, Boston, Mass.

Prof. Henry C. Sherman, Department of Chemistry, Columbia University, New York City.

Dr. A. H. Stewart, antitoxin laboratories, Department of Health and Charities, Philadelphia.

Dr. William Royal Stokes, bacteriologist to State and City Health Departments, Baltimore.

Prof. William A. Stocking, Department of Dairy Industry, Cornell University, Ithaca, N. Y.

Mr. Chester H. Wells, Health Officer, Montclair, N. J.

Dr. L. L. Van Slyke, Department of Chemistry, New York Agricultural Experiment Station, Geneva, N. Y.

Dr. Charles E. North, Consulting Sanitarian, member New York Milk Committee, New York City, secretary.

This Commission's platform of effective and efficient measures for the betterment of milk production and distribution comes as the sequel

of a quarter of a century of voluntary labors on behalf of the babies — it comes as the flower and fruit of efforts of which my own have been only a part.

But my subject is not entirely retrospective. Voluntary effort and voluntary organization have worked out a definite and comprehensive plan of betterment that is fully and emphatically indorsed by the Public Health Service and the Department of Agriculture — that is indeed but a modification of the measures advocated by these Federal agencies as a result of the thorough investigation of the milk problem by the Public Health Service under President Roosevelt.

This program needs to be applied and enforced in every city of the land.

This, I maintain, is the chief and imperative work and duty of voluntary organizations at this stage of the campaign for the betterment of milk production.

All infant milk depots maintained by private philanthropy are but examples to the municipalities of what ought to be done by the public officials with public funds. All milk committees are first and chiefly agencies charged with the responsibility of seeing to the adoption and enforcement of this program that has grown out of a quarter of a century of earnest work.

FUNCTION OF MILK DEPOTS.

In regard to the function of milk depots I feel obliged to emphasize one lesson from my own long experience, namely:

That the fundamental and vital duty of the milk depot is to furnish milk in nursing bottles, one feeding to the bottle, properly modified according to formulae suited to the different ages of babies, and pasteurized in the bottles. This assures the highest degree of safety.

The supplying of dipped milk — of milk drawn from cans and put in containers brought by the mothers — ought to be rigorously prohibited. It is bad enough to allow dipped milk to be sold for general use. It is criminal to supply milk in this way for babies, however good the milk may be in the first place, for the reason that the sensitive fluid is thus exposed to contamination.

I must maintain, therefore, that the milk depot fails to fulfill its primary object unless it supplies milk for infant feeding — milk modified and then pasteurized in the nursing bottles.

As to the efficacy of this direct and simple method of preventing sickness among the babies, I wish to cite the record of my own work in New York City during the past Summer:

With an average of 2,200 babies supplied with milk from my laboratories there was just one death, and that was due to pneumonia.

In this connection I should say that in all the twenty-one years of my work I have been guided in all things by the friendly advice of that greatest of all specialists on infant feeding, the dean of the American medical profession, Dr. Abraham Jacobi, whom the medical men of two hemispheres delight to honor.

DISTRIBUTION OF MILK.

Instruction of mothers is important. Medical attention is important. I have always supplied both. But these things are secondary, and I cannot but regard it as a grievous error to treat these things as fundamental, and to make secondary the dispensing of the food the babies require — for it is the food, clean, safe, wholesome food, that the babies need more than anything else in the world.

I speak of this frankly and plainly, because there is an unfortunate disposition on the part of well-meaning people to exaggerate the "consultation" to the detriment of the fundamental duty of the infant milk depot. In some cases the resources of the organization are exhausted upon nurses and doctors, and little is done in the way of feeding the babies. The mothers are overwhelmed with instructions, while the babies cry in vain for the food that is their essential need.

And so it has been in New York, where my seventeen depots are the only ones out of a hundred that supply modified pasteurized milk in nursing bottles ready for use upon warming.

Nothing could be further from my purpose than to discourage the well-meaning people who have taken up this work, but I think I have a right to speak out of my experience, which has extended over a longer term of years and has reached more babies than any other work, and to say to the people who have lately embarked upon this important work in all kindness and sincerity that they are in danger of minimizing the real effectiveness of their efforts.

HOME PASTEURIZATION.

As to modification and pasteurization of milk in the home, it is indeed very desirable that the mothers should be taught how to prepare the milk for their babies, and I have tried to make it easy for them to do so by devising a simple home pasteurizer. But even its use is feasible only for the better situated classes. Where the mother goes out working, returns in the evening tired, worn out by her labors, to find perhaps her baby crying for its bottle, it is cruel to demand that she should follow out the complicated and difficult process of modification and pasteurization. Besides, it must be remembered that conditions in tenements do not ordinarily make it possible for mothers to do this work properly and with the scrupulous cleanliness that is essential.

The object, therefore, should not be to substitute home-prepared feedings for those supplied by the milk depot, but to encourage the use of the depot milk where it can be had, and only to teach the mothers how to prepare the feedings where they cannot get the better prepared milk from properly conducted pasteurized milk depots.

And in case of home preparation, with all the increased probability of contamination, it is even more than otherwise necessary to insist strictly upon pasteurization.

In all that is said of infant milk depots, it is ever to be remembered that these institutions are for babies that, for one reason or another, are deprived of the better sustenance of breast feeding, and the very first duty of all these institutions is to persuade and encourage mothers, wherever it is physically possible, to nurse their babies as nature intended.

PURPOSE TO BE KEPT IN VIEW.

To sum up briefly, all individual or organized voluntary efforts will fail of their purpose unless they tend directly and powerfully and unitedly to fix the responsibility where it belongs — on the municipal and State health authorities; unless they tend to compel such authorities to take up energetically the work of regulating milk production and distribution and the maintenance of pasteurized milk depots for the babies; unless they see to it that the work of such public agencies is carried out definitely and uncompromisingly along the lines set by the Commission on Milk Standards and the Public Health Service.

Many days will pass before these results are achieved, before the milk supplies of our cities are really and efficiently safeguarded by the officials charged with that duty. Meanwhile there is work to be done.

The babies cry for protection against disease; their mothers lift their hands in frantic supplication for their little ones. Disease and death throw their shadow over the cradle and engulf the mothers of the land in the inextinguishable sorrow that we can ward away from the home.

It is a call to battle — a call to united and energetic action. In this emergency it is not enough to talk; it is not enough to educate the public and the health officers. We must do all this, but we must do more. We must bend all our energies, strain all our resources to save the babies that are now living and all those who will come into the world before the tardy hand of official administration has been quickened and strengthened to grapple with this menace to the home and to the land.

GREAT POSSIBILITIES.

We need infant milk depots, we need doctors and nurses consecrated to the work of assuring to the little ones the food that they need free from the taint of disease. We need the co-operation of the poor and the purses of the rich. As I have often said, it is a work beyond the means of any one man or set of men — it is a work for all men and all women.

It is a work too big and great with possibilities of human good to afford room for jealousies or for disputes about non-essentials or about methods. It is not a clinical work. The babies are human beings, not subjects for study and exhibits for committees or doctors. They are human beings threatened with death, and it is our function to save them — not to talk about them, not to experiment with them, not to catalogue them, but to give them the chance to live that they can have only in properly pasteurized milk properly modified, with such medical attention as may be needed in particular cases.

This is a work to stir the good red blood in every man and woman who has the fundamental instincts of humanity, a work that has greater possibilities of good than any other that I have ever heard of, a work that will pay dividends in the satisfaction that can come only in helping the little ones, in making their hands chubby and their faces rosy and giving them the fair start in life to which they are entitled.

TEACHING CHILDREN PREVENTION OF DISEASE.

New York, January 31, 1914.

Dear Governor:

IT gratifies me extremely to learn that you have taken steps to bring the matter of the pasteurization of milk before the educational authorities of Connecticut, with the idea of teaching the protection of child life in the schools.

This, it seems to me, is a forward move of great significance and of most extensive possibilities.

In view of the fact that the infectious diseases which slay so many children are often conveyed in raw milk, and of the other proved fact that tuberculosis often has its origin in the drinking of raw milk from tuberculous cows, it is impossible to over-estimate the good that is likely to result from implanting in the young the knowledge of these facts and the methods by which these infections can be avoided.

This is an age of great progress in the protection of the public health, but it has remained for the State famed for its sober sense to take up the question of fore-arming the rising generation by fore-warning them. There can be no better way to assure to those who come after us the intelligent avoidance of the great peril that now menaces the entire nation in the reckless use of raw milk.

The necessity for pasteurization, which in no wise changes the taste or other properties of milk, has been thoroughly proved by science and is emphasized by all competent authorities upon public health questions. But it remains to bring this knowledge home to the people. There can be no better way than through the schools.

I earnestly hope that your action will result in Connecticut setting an example to the whole nation in instituting this life-saving work.

Very sincerely yours,

Nathan Straus

*The Hon. Simeon E. Baldwin,
Governor of Connecticut,
Hartford, Conn.*

"It has seemed to me strangely perverse for the nations to spend hundreds of millions on men and machinery for the killing of human beings and to be so niggardly in providing means for the conquering of the diseases that slay more people annually than all the armies in the world kill in a century."

— Nathan Straus, in letter to M. Picard, the French Mathematician, Jan. 10, 1914.

"The tuberculin tests plus pasteurization is the ideal protection."

-- Nathan Straus, in letter to Dr. E. C. Ruhland, Health Commissioner, Milwaukee, July, 1914.

"If public officials charged with the protection of health could really know a mother's grief over the loss of her baby, how eager they would be to remove the causes of preventable diseases."

— Nathan Straus, in letter to Dr. John M. Beffel, Milwaukee, July, 1914.

GIVE THE BABY A FAIR CHANCE TO LIVE.

ADDRESS BY MR. NATHAN STRAUS BEFORE THE CALIFORNIA
LEGISLATURE, MARCH, 1914.

LONG before I had the opportunity to enjoy personal contact with the people of this wonderful state I was deeply impressed with the progress that was being made in California in adjusting the conditions of life so as to give everyone a better chance. Then in 1912 I had a revelation of the spirit of the California people. It came in a speech. I did not hear it, but I read it. Even in cold type the words were burning, as with living fire; the eloquence warmed me, stirred me, aroused me. It was a fervid, burning cry for social justice. It rang in my ears many days; it stirs me now. It was an appeal for the man underneath, the man way down below who is a living part of the great machine that we call civilization. It was the appeal made in my own state of New York by your Governor Johnson.

The voice was the voice of your first citizen; the spirit, as I now know, was the spirit of California.

He spake not for himself alone, but for you all. The words came not merely from his heart, but from your heart. He came from the far west to stir the self-satisfied east and rouse it to that pitch of human feeling that makes man brother to man and yokes the strong and powerful to the task of uplifting the weak and helpless.

But social justice does not mean merely the translation into laws and human conduct of the principles of human brotherhood. It means, too, the realization of our common fatherhood and motherhood — of the fact that all the babies born into this world are ours, as a people, and that it is the duty of us all, as a people, to care for them, to protect them, to shield them, to preserve their lives, to endow them with health and strength so that they may have fair chance to make their way in the world when they outgrow parental protection.

THE BETTER CIVILIZATION.

It was a half-way sort of a civilization that took the child at six or seven years and led it for a decade through the public schools, giving it an education.

It is a better civilization that concerns itself with the child as it enters the world and watches over it from the cradle to manhood or womanhood.

This better civilization sees to it, first of all, that the baby has a fair chance to live and to enjoy health. This is the sum and substance of the work that has been engaging my attention for the past twenty-four years — that has become my real life work.

A fair chance to live! That means the prevention of the diseases that attack, sap, weaken and kill so many of the babies that are born.

Now it used to be regarded as inevitable that babies should have summer complaint, scarlet fever and diphtheria and the rest of the infectious diseases. Generations after generations were decimated by

these diseases before prevention began, in a rudimentary way, by trying to restrict the spread of these diseases by isolating the little patients. That did good, but such methods of prevention were superficial. They did not go to the common cause, the germ, the seed from which these diseases sprang.

Now it is known that these infectious diseases, including tuberculosis, are caused by a germ, a minute organism that lives and thrives and multiplies in milk. This knowledge enables us to work intelligently and effectively to prevent these diseases.

We can't refuse the babies the milk that is the only food that they can use, but we can make all milk safe food for them by pasteurizing it.

This is the message that I have for you — the message that I have been delivering for a quarter of a century, the message that has been heard and heeded by our greatest cities and endorsed by our United States Public Health Service, the agency that delivered San Francisco from the bubonic plague.

WHAT PASTEURIZATION MEANS IN LIVES SAVED.

Pasteurization means the heating of milk to 157 degrees Fahrenheit and holding it at that temperature for twenty minutes and then cooling it quickly.

This process destroys all the germs of disease that may be in the milk, but it does not impair the taste, or the digestive or the nutritive qualities of the milk.

"Use no raw milk," says Dr. Jacobi, the dean of the American Medical profession. Give the babies no milk except pasteurized, and they will be fairly safe, for you will remove from them the common cause of tuberculosis, of typhoid and scarlet fevers, of diphtheria and septic sore throat and of the summer complaints that slay so many.

In your own state of California in 1913, out of a total of 38,602 deaths, 5,982, or over 15 per cent., were deaths of children under five years of age, and 1,823 of these children were victims of the infectious diseases that are disseminated by raw milk.

That is, nearly one-third of all the deaths of children under five years of age in this state were due to diseases that are often caused by raw milk.

That is why I urge the protection of the lives of the children by pasteurizing the milk.

That is why the city of New York now requires the pasteurization of all the milk sold in that city except a very small quantity, about two per cent of the total supply, that comes from tuberculin-tested cows and is produced under such remarkable conditions of cleanliness and care as to cost from three to four times as much as ordinary milk.

This is the policy that is now advocated by the Public Health Service, the American Medical Association and the National Commission on Milk Standards, a body of seventeen experts of national reputation, who made an exhaustive study of the milk problem.

If you adopt this policy you will immediately cut down the death rate in your cities and in the state. In 1913 there were thirteen states that had lower death rates than California. In the same year there were six cities of over 100,000 population that had lower death rates

than Oakland, 14 that had lower death rates than Los Angeles, 29 that had lower death rates than San Francisco. These are conditions that can be corrected, and I speak from practical experience when I tell you that there is no way in which you can cut down the death rate so quickly and so surely as by the pasteurization of milk.

PASTEURIZATION PREVENTS TUBERCULOSIS.

In what I have said I have included tuberculosis among the diseases that are often caused by raw milk and have urged pasteurization as an effective method of striking at the very source and origin of this much dreaded plague.

In respect to tuberculosis the effect of pasteurization is much more far reaching than in the case of the other milk-borne diseases. The other infections quickly run their course. The germ of tuberculosis, however, may be implanted in the system by being swallowed in raw milk and may lie dormant for years, producing consumption when a run down condition of the system gives it opportunity to seize its victim.

For this reason, while the other infections are shown quickly in the sickness and it may be the deaths of children, this infection with tuberculosis, though incurred in infancy, may not manifest itself until later years. This explains the grip of the great white plague upon people of all ages.

Now in the registration area, or that part of the United States from which we have complete mortality statistics, the death rate from tuberculosis of all kinds is 147.5 to every 100,000 of population, but in California it is 203.2.

This condition, I understand, you are dealing with through measures to require the registration of all cases of tuberculosis, the establishment of county hospitals for the treatment of the victims of the plague, state appropriations for the encouragement and support of this work. These measures are all good and each of them deserves your unanimous support.

But when the bubonic plague ravaged San Francisco you were not content with such measures. You did not feel that you were doing your full duty in treating the victims. You killed the rats that bore to you the infection that caused the plague.

You will have to be similarly vigorous if you want to stamp out the great white plague that causes one-seventh of all the deaths in this fair state of California.

You will have to begin with the cattle, by strictly forbidding the importation into California of any cattle unless they have been tested with tuberculin, and have shown no reaction indicating tuberculosis.

Then you will have to proceed to use the tuberculin test on your own herds, thus singling out and destroying the infected cattle, the state reimbursing the owners for cattle condemned.

Then you will have to establish by law the rule that is in force in New York City, requiring the efficient pasteurization of milk.

The tuberculin test plus pasteurization spells safety.

It is the proved and effective way to stop tuberculosis at its source.

IF MEN COULD ONLY KNOW.

I yield to none in urging the proper care of the tuberculous patient, but I do maintain with all earnestness that there is a far greater work to be done in preventing tuberculosis, for when we cut off the sources of the plague, neither cure nor care will be necessary.

In my own long struggle for pasteurization I was sustained by the knowledge that I was saving the lives of defenseless babies and that I was helping to secure to them a heritage of good health instead of the living death of the consumptive. I was sustained, too, by the knowledge that I was saving mothers from the bitter grief of the loss of a little one, or from the almost equally poignant sorrow of seeing a son or a daughter condemned to the prolonged tortures and the sure death of tuberculosis.

If men could really know what that grief is — what a mother suffers when she sees her child lying cold and silent in death or racked by the cough of the consumptive, wasting away day by day — if men could only know this, how eager they would be to remove the causes of preventable diseases!

If you men could feel as a mother does when she follows the little white coffin to the cemetery, or when she ministers to a consumptive son or daughter, there would be no raw milk sold in California.

CONFIDENCE IN THE ABOLITION OF TUBERCULOSIS.

LETTER ON THE OCCASION OF THE DEDICATION OF A SANATORIUM, JUNE 4, 1914.

I DEEPLY regret that my plans are such that I will not be able to attend the dedication of your Tuberculosis Sanatorium for Employees at Mt. McGregor on June 20th. I would like to show in person my appreciation of your great work, and I would not fail to attend if it were possible for me to do so.

Permit me, however, to take this opportunity to congratulate you on the splendid humanitarian work that you are doing in fighting tuberculosis, not only in this institution that you are founding, but in your widespread and ably conducted campaign for the prevention of the great white plague.

I look forward eagerly to the day when tuberculosis will be as rare as small-pox. This is theoretically and practically possible, amazing as this statement may seem. I am encouraged to entertain this optimistic confidence by reason of the progress made in the twenty-five years since I began my efforts to stop the causes of tuberculosis. Pasteurization of milk is now rapidly becoming the rule in the great cities instead of the exception. The evil of reckless expectoration in public places, which I fought as President of the New York City Board of Health, is now practically eliminated. The Preventorium idea that I initiated six years ago has been widely copied. There are many people now alive and well whom I sent to the Adirondacks years ago with fully developed cases of tuberculosis.

I recite these facts because they present a very solid basis of confidence. These measures of prevention, unthought of a quarter of a century ago and scouted when I first urged their adoption, are now helping humanity to conquer its greatest foe.

But this work was far too great for one man, and I rejoice that so many individuals and organizations are enlisted in the war for the deliverance of mankind from the great white plague. Among these organizations there is none so powerful and so far-reaching as yours, and I rejoice that the cause is advanced by such capable and devoted men, and that you are giving the world at large such an object lesson.

THE FOUNDATION OF THE CHILD WELFARE MOVEMENT.

PAPER READ BY MR. NATHAN STRAUS BEFORE THE IIIrd INTERNATIONAL CONGRESS ON THE WELFARE OF THE CHILD, HELD UNDER THE AUSPICES OF THE NATIONAL CONGRESS OF MOTHERS AND PARENT TEACHERS ASSOCIATIONS, WASHINGTON, D. C., APRIL 23, 1914.

IN its origin the movement for the welfare of children was, if you please, sentimental. It was the tenderness that every right-hearted man and woman has for the innocent and helpless little ones. In its development the movement has become economic. It is the potential value of the child to the family and to that larger family that we call the Nation.

When I began my work of protecting the lives of babies twenty-three years ago, the death of infants caused little concern except to the bereaved parents. While the mother's heart was wrung by grief inextinguishable, others gave only a sigh to the passing of a life just in the bud of existence. It was thought natural for many babies to die without reaching their second year.

My first work was to teach the world that it was very unnatural, that it was monstrous, that it was wicked to permit the babies to be mowed down at the very dawn of life.

Then nearly one-half of all the deaths in New York City were of children under five years of age. Now less than a quarter of the deaths are in this age group.

I rejoice that noble women and men of large sympathies are devoting their energies to the betterment of the condition of children, that the work has been developed along many lines, that it touches the lives of babies and of older children, that it concerns itself with their training as well as with their health. All this work is good — God-given, God-blessed, God-pleasing.

But I have kept to the original lines of my life-work as it opened up to me in 1892. I have labored with the one object in view — the saving of the lives of babies.

To promote child welfare we must keep the child. We must fend off the diseases that would pluck away the flower and leave in our hands only the empty stem of a mother's hope.

This is the fundamental work — the base on which rests all the humanitarian effort on behalf of the children.

In all the elaboration of effort and the multiplication of the measures for the welfare of the child, I beg you to mark well and to hold fast to the fundamental truth that much of the sickness that robs the cradle and prostrates the mother with grief is unnecessary and can be avoided by the simple expedient of pasteurizing the milk that is fed to babies, so that their food may not by any chance be to them the means of death.

This is the foundation of your work. It is the fundamental factor in child welfare.

DISEASE PREVENTION DAY.

LETTER WRITTEN BY MR. NATHAN STRAUS TO THE GOVERNOR OF
EACH OF THE AMERICAN STATES, IN JUNE, 1914.

Dear Governor:

THE Governor of Indiana has proposed a plan that will pay dividends to the State and its people. The idea is one of the best that has ever been originated in this country. It is so good that I want to pass it along to you in the hope that you will adopt it in your state.

Gov. Ralston's plan is to set a day in October, by proclamation, to be observed as "Disease-Prevention Day," in order to awake the people and the officials of the cities and towns and rural districts to the practical methods of preventing sickness and prolonging life.

The health of its people is the greatest asset a state can have. Improve the public health and you increase the resources of the commonwealth. You cut off waste, public and private, promote community prosperity and individual welfare, encourage happiness. What greater deed could you do to earn the gratitude of the people of your state?

Much ill health and many thousands of deaths are due to ignorance of the causes of sickness, many of which can be removed. Prevention is the word to teach, and an ounce of prevention is worth tons of cure.

The benefits of disease-prevention can be brought home to the people in no better way than by the country-wide observance of a Disease-Prevention Day.

Will you enlist your State in this movement?

Nineteen years ago, almost at the beginning of my efforts to save the babies, I addressed a letter to the Mayors of the American cities, urging the adoption of pasteurization as the efficient method of preventing the dissemination of disease through milk, and on Sept. 29, 1897, I appealed to the National Conference of Mayors and Councilmen, in session at Columbus, Ohio, urging that "the dictates of humanity and of public duty combine in demanding that this backwardness (in preventing disease) should no longer exist."

Much progress has been made in these years, particularly in improving the milk supplies and in the indorsement of pasteurization of milk by the U. S. Government and in its widespread adoption. But much remains to be done, and I hope that you will agree with me that the time is ripe for a concerted movement to stir the whole community of this great nation to action against preventable diseases.

Twenty-three years ago, when I began my work, prevention was novel and I was laughed at; now prevention is the order of the day.

Will you be one of forty-eight governors to set a day next October to fix this great public necessity in the minds of the people? In order to make the proposition definite, will you so designate the first Saturday in October, the third of the month?

The success of this whole work of disease prevention depends in the first place upon bringing the facts to the people. Once informed, they will compel the removal of the causes of unnecessary sickness.

For instance, here is one concrete fact:

During the summer of 1900 bad milk was an important factor in the deaths of 54,266 babies from intestinal disorder in the United States. In the same period there were no deaths from this cause among the 2,500 babies supplied with pasteurized milk from my infant milk depots in New York City.

Very sincerely yours,

Nathan Straus

KNOWLEDGE THAT PROTECTS THE FAMILY FROM ITS CHIEF FOE.

PAPER PREPARED BY MR. NATHAN STRAUS FOR THE HOME EDUCATION CONGRESS TO BE HELD IN PHILADELPHIA IN SEPTEMBER, 1914, BUT POSTPONED ON ACCOUNT OF THE WAR.

(Reprinted from the Child Welfare Magazine)

THERE is knowledge that is Power. There is knowledge that is Wealth. There is knowledge that is Life. And of these three the greatest is the last, for of what use is Power, or Wealth, or both, without Life?

Yet only within the present generation has humanity really emerged from the fatalism that accepted sickness and death as inevitable. Only within our memory has come that great humanitarian movement that has for its object the discovery and application of means to PREVENT sickness and to prolong human life.

It was a century after Jenner in 1780 discovered the virus which is the efficient preventive of smallpox before the civilized world systematically applied vaccination to the control and eradication of that dreaded scourge. It was in 1875 that the first extensive use of Jenner's vaccine was made, and it was 1889 before its use became general, yet in 1914 smallpox is classed among the diseases that have been practically eradicated throughout the civilized world.

But there is another plague that has been traced back in medical history to the time of Hippocrates, the father of medicine, 460 B. C., and that has held all humanity in its grip of terror for twenty-four centuries. This scourge that we used to call consumption, that we now know as tuberculosis, has struck humanity with relentless deadliness in all lands, through all these centuries, no one knew how or why, entailing prolonged suffering, for which there was no known cure and little relief. In ignorance of its cause humanity feared and suffered and died.

EMERGING FROM THE DARK AGES.

But the day has dawned after 2,400 years of dreadful night. The knowledge that is Life is in the grasp of humanity after all these wasting centuries. We have emerged from the dark ages of supine surrender to the Great White Plague and have entered the golden dawn of the era of PREVENTION.

About a generation ago we began to make progress in the knowledge of tuberculosis, and it is this knowledge that is to set us free.

It began in 1882 with the discovery by Dr. Robert Koch of the germ that causes tuberculosis — the tubercle bacillus. For this all honor to that famous German bacteriologist, though by a grievous error of hasty assumption in 1901 he set back the whole work of prevention by denying the since proved communicability of bovine tuberculosis to human beings.

Following the Koch discovery came the battering down of errors that had been held for centuries and that added to the terror of the plague. It was proved that tuberculosis was not necessarily hereditary and not contagious, but that it was communicable only through infection with the specific germ that causes the disease.

Thus it became possible to trace infection to its sources and to be forewarned with the knowledge necessary to be forearmed against the chief foe of the family and of the human race.

It has been thoroughly demonstrated that there are two chief sources of infection — the tuberculous patient and the tuberculous dairy cow. It has been demonstrated that ordinary care diminishes the peril of the transmission of the infection from one person to another. Likewise it has been proved that pasteurization of milk prevents infection through this practically universal food. Thus we are supplied with the knowledge that is Life, that makes plain and possible the prevention of tuberculosis.

To one person who is exposed to remotely possible infection from a living human case of tuberculosis, there are thousands who are daily exposed to the peril of drinking live, virulent tubercle bacilli in raw milk. So it is clear and mathematically demonstrated that the main channel of infection, the most common cause, is the milk supply.

THE RESULT OF PERSONAL EXPERIENCE.

This was brought sharply to my attention a quarter of a century ago. At my summer home in the Adirondacks, to be sure to have pure milk for my family, I kept a cow, but it fell sick and died. Thinking that the animal had been poisoned, I called in a veterinary surgeon. He found the cause of death easily enough — the cow's lungs had been eaten away by tuberculosis.

Thus warned of the danger by personal experience, it seemed clear to me that if a person who kept a cow under the best conditions could be exposed to tuberculosis in this way, the babies of a great city, fed upon ordinary market milk, must be daily subjected to the perils of a diet of live, virulent tubercle bacilli.

Therefore I proceeded in 1893 to apply the remedy by supplying pasteurized milk from infant milk depots that I established in New York City, later extending this work to other cities both in America and abroad. In initiating this first practical effort to stop tuberculosis at its source, I acted under the advice and with the sympathetic encouragement of that prince of savants, Dr. Abraham Jacobi.

In 1894, in an article which I wrote for "The Forum," I said:

I hold in the near future it will be regarded as a piece of criminal neglect to feed young children upon milk that has not been sterilized (pasteurized). Milk is not always good in proportion to the price paid for it, nor free from the germs of contagion because it has come from cattle of aristocratic lineage. The latter quality, as recent experience has shown, carries with it special susceptibility to tuberculosis.

At first the editors refused to print this statement as being too radical, but as a compromise put it in a footnote. Now this has become the battle cry of this whole campaign.

THE ONLY ABSOLUTE SAFEGUARD.

When Dr. Koch expressed the contrary opinion in 1901, his baseless assumption was stoutly disputed by Dr. Ravenel, by Drs. Schroeder and Mohler, of the United States Department of Agriculture, and by the British Royal Commission on Tuberculosis.

(Here Mr. Straus cited the conclusions of investigators and of scientific bodies as to the transmission of tuberculosis through raw milk, and showed the failure of certification of milk to protect humanity from tuberculosis.)

Dr. Charles E. North, of New York, supervised the experiment of the N. Y. Milk Committee which endeavored to produce clean raw milk. After two years of serious practical attempts to establish the feasibility of such milk production in January, 1912, he declared:

I finally became convinced that in pasteurization lay the only absolute safeguard.

In short it is thoroughly established that milk from tuberculous cows is one of the chief causes of the persistence of tuberculosis in human beings, and that pasteurization of the milk supplies kills the tubercle bacilli, rendering the milk safe as food without any impairment of its qualities.

This is the knowledge that is Life, that is to set us free from this age-long scourge.

Proof of the correctness of this knowledge is piling up rapidly. Only recently Dr. A. Philip Mitchel, of Edinburgh, reported that of seventy-two cases of tuberculosis in children examined, sixty-five, or ninety per cent., showed bacilli of distinctly bovine type. Such evidence could be cited ad infinitum.

HUMANITY NEED NOT SIT HOPELESS.

Forewarned by these facts is to be forearmed. Humanity need not sit helpless in vain despair, but can effectually protect itself from the chief foe of the family and of the human race.

Not only is this cause of tuberculosis known and recognized by the highest scientific authorities, but the remedy is equally well known and simple and easy of application. This remedy is PASTEURIZATION, which consists in heating milk to a temperature that is far enough below the boiling point to prevent the cooking of the milk, yet high enough to kill all the tubercle bacilli as well as all other disease germs that may be in the milk. My own practice, verified as efficient by twenty-three years' practical experience, has been to heat the milk to from 146 to 158 degrees Fahrenheit (63 to 70 degrees Centigrade) and hold the milk at that temperature for twenty minutes. This not only surely kills the germs of tuberculosis, but at the same time thoroughly destroys the germs of typhoid and scarlet fevers, diphtheria, septic sore throat, summer complaint, etc.

When this system of rational self-protection becomes universal instead of occasional and local, when the urgent need of social betterment is more generally recognized and the necessary remedies made effective, we may expect to see headway made against tuberculosis, with the result that in a reasonable time it will be as infrequent as smallpox.

This is not the rash prediction of an enthusiast, or the rosy hope of an optimist, but it is the settled conviction of a man whose life-work has been the elimination of tuberculosis from the catalogue of human miseries.

Just here I wish to recognize most clearly that my own apprehension long ago of the cause of tuberculosis and my personal efforts and my example in applying the remedy would have been of little avail and of effect only locally if it had not been for the patient and skilful work of scientists on two continents in investigating both the cause and the remedy. Bacteriologists and chemists in their laboratories have toiled over the problems of the milk supply and have prosecuted their studies at the dairy farms, while medical men have keenly watched the effects of this dreaded infection in hospitals and have noted the results achieved by pasteurization, until modern science is absolutely sure of its ground in fixing upon the tuberculous dairy cow the responsibility for much of the human tuberculosis and in indorsing the stand that I took twenty-three years ago in advocating pasteurization as the remedy.

MAKE AN END TO EASY GOING TOLERATION.

The rapidity with which prevention of tuberculosis takes the place of easy-going toleration and misdirected efforts depends entirely upon the press and the public. The knowledge that is Life needs to be disseminated by the newspapers, who have led every movement for the public good, until the people generally demand milk that is made safe for human consumption by pasteurization. What the people demand they soon get, and when they get universal pasteurization they will have achieved the beginning of the end of tuberculosis.

In Rome in April, 1912, in the course of the address that I made as Official Delegate from the United States to the Seventh International Congress Against Tuberculosis, I said:

This is an age of vast expenditure for battleships and armies. All Europe is staggering under the burden of maintaining huge engines of destruction. With an hundredth part of this outlay the greatest war of all the ages could be fought out, the greatest foe of humanity, tuberculosis, could be conquered. Instead of battlefields strewn with dead there would be cities, towns and villages made happy by the saving of parents and children, of brothers and sisters, from the dreaded White Death.

We are seeing today the effects of the creation of these huge engines of destruction, with eleven nations in the grip of a frightful war that has arrested the progress of every other nation.

Eight million men have been withdrawn from the pursuits of peace to kill each other. The great war machines that have been built by the eight warring nations have cost \$25,000,000,000. The flower of European manhood is on the battlefield, on murder bent, and the daily cost in money is \$50,000,000, with no reckoning yet of the price paid in lives for the mad folly of kings.

Humanity stands aghast at the wanton destruction of lives, at the huge waste of treasure. The people of these nations have borne with little complaint the burden of taxes that has made this war possible. Would they not eagerly bear the cost of conquering humanity's chief foe — tuberculosis?

There is a nobler warfare to which we are called — war against dirt, disease and death; war in defence of our most precious possessions — the infant inheritors of the unfolded future.

PROVED METHODS OF PREVENTION.

"Driftwood," Mamaroneck,

September 30, 1914.

Dear Sirs:

I GREATLY regret that I will not be able to attend the conference on October 16th, but I want to express my appreciation of your energy and wisdom in organizing this conference and my hope that it will be fruitful, particularly in the advancement of the active work of prevention.

Throughout the quarter of a century that I have been engaged in the prevention of tuberculosis I have been deeply impressed with the fact that the very best thing that man can do for his fellows is to help to fight disease at its source, for with efficient prevention neither care nor cure is needed.

What can be done in the way of prevention of tuberculosis has been demonstrated along the two lines on which I have worked, namely, in the pasteurization of milk, so as to cut off this source of the infection, and in the establishment of preventoria in which children taken from tuberculous environments can be fortified against the disease.

My practical experience has convinced me that when these methods are more fully appreciated and more widely applied tuberculosis will become as rare as smallpox instead of holding humanity in its grip.

I earnestly hope, therefore, that the North Atlantic Conference will strongly reaffirm the position taken by the National Association in 1911 when that body unanimously recognized milk from tuberculous cattle as "the medium through which transmission of bovine tuberculosis to human beings most commonly takes place" and recommended "the efficient pasteurization of milk as a safeguard against the transmission of bovine tuberculosis to mankind."

I also hope that the Conference will indorse and promulgate the idea embodied in the Tuberculosis Preventorium for Children which I founded at Lakewood in 1909 and which is now showing marvelous results in its permanent home at Farmingdale, N. J.

These are methods of prevention that are thoroughly practical and of proved efficiency. I am convinced that upon their extensive use depends the conquering of tuberculosis.

I yield to none in urging the proper care of the tuberculous patient and in encouraging the devoted medical men who are devoting their lives to the treatment of the disease, but I do maintain that there is a far greater work to be done along the lines of prevention.

It is now possible to lift the curse of the Great White Plague. Let us be up and doing for the sake of humanity.

Very sincerely yours,

Nathan Straus

North Atlantic Conference on Tuberculosis,
Dr. Charles J. Hatfield, Secretary,
Philadelphia, Pa.

CERTIFICATION OF TUBERCULOUS MILK.

November 23, 1914.

Dear Dr. Williams:

I HAVE been greatly distressed by the report of the Boston meeting of the American Association for the Study and Prevention of Infant Mortality held under your presidency. Knowing of your own keen interest in the welfare of the babies I can hardly credit the dispatch sent out by the Associated Press, which was as follows:

"Pasteurization and other safeguarding methods adopted by the National Commission on Milk were refused endorsement by the American Association for Study and Prevention of Infant Mortality at its convention here today. The principal opponent of the Commission's plan was Dr. Henry L. Coit, of Newark, who said: 'My 25 years' experience teaches me that medical commission control is not the solution. I have eliminated from my parlance pasteurization and have substituted the word refined. Pasteurization is playing with the problem. We must educate our people to do their refining of milk in the home.'"

I would greatly appreciate it if you would kindly tell me what really did happen at the meeting.

Did the special committee make a report on the milk problem? And can I have a copy of the report, with word as to the action taken thereon?

I do hope that the Association was not misled by Dr. Coit, who has long posed as the "father of certified milk," but who was thoroughly discredited last month. That he should cast a shadow over your Association and deliberately mar your splendid work for the babies is inexpressibly wicked.

As President of the Essex County (N. J.) Medical Milk Commission, Dr. Coit certified the milk from the Fairfield Dairy at Montclair, N. J. On October 14 it was established that the herd was badly diseased; within a week 126 tuberculous cows were found in 350 tested out of a herd of 632. On October 24 Dr. Coit certified that "the herd is now as free and clear of disease as science and human endeavor can make it," and within five days 65 more tuberculous cows were found in the herd, making 191 in all.

I hold that it is murder to give tuberculous milk to a baby. I am at a loss for terms to describe the crime of certifying that tuberculous milk is free from tuberculosis. No wonder that Dr. Coit, under the condemnation of this exposure, finds "that medical commission control is not the solution" of the milk problem.

Two days before Dr. Coit appeared before your Association the Montclair Board of Health ordered the pasteurization of the milk that Dr. Coit persisted in "certifying."

That he should come straight from this collapse of the "certified milk" delusion to oppose the well-considered and conservative recommendations of the National Commission on Milk Standards was an amazing affront to the earnest men and women who are banded together to seek ways to prevent infant mortality.

I sincerely hope, in spite of the Associated Press report, that he did not succeed in misleading you.

Very sincerely yours,

Nathan Straus

Dr. J. Whitridge Williams,
1128 Cathedral Street,
Baltimore, Md.

THE RELATION OF THE CITY TO THE MILK SUPPLY.

PAPER READ BY MR. NATHAN STRAUS BEFORE THE AMERICAN
PUBLIC HEALTH ASSOCIATION IN SESSION AT JACKSON-
VILLE, FLA., DECEMBER 5, 1914.

THE protection of the health of the people of a city is an accepted obligation of the modern municipality. It is a function quite as inseparable from municipal government as the policing of the City, the maintenance of streets, protection from fire and the schooling of the children.

In the course of the development of the functions of municipal government the water supplies, provided by private enterprise, came under municipal supervision because public policy demanded safeguards against the spread of typhoid fever through infected water.

Mere supervision proved in many cases insufficient. It was found to be a post-mortem protection. Typhoid came first; then measures to purify the water supplies.

Necessarily, therefore, the cities took the water supplies under their absolute ownership and control. Now water works are built and operated as a matter of course by municipal governments, and no one would for a moment tolerate the proposition that the supplying of water for domestic uses be turned back into the control of private corporations.

WATER MAY CARRY ONE PLAGUE.

Under municipal control the water supplies have generally ceased to be sources of typhoid fever. One of the three great causes of that disease has been absolutely eliminated in most cities by having city-owned, city-purified and city-distributed water supplies.

Infected milk supplies and contact with cases of typhoid remain as the unconquered sources of the infection.

The duty of the municipality to PREVENT disease has been well exemplified in the improvement of the water supplies under municipal ownership. The policy, long bitterly assailed, has been vindicated.

But the duty of the municipality does not end with the supplying of pure, germ-free water.

It is equally important that the people have pure, germ-free milk.

I am conservative in saying that this is equally important.

Milk is a universal necessity in only a slightly less degree than water.

MILK MAY CARRY SIX PLAGUES.

Milk, even more than water, is a carrier of the germs of disease — not of ONE disease, but of SIX, not counting the foot and mouth disease.

Water has often been responsible for outbreaks of typhoid fever.

Milk, in the raw state, is more often the cause of typhoid.

Milk not infrequently carries the germs of diphtheria, scarlet fever, septic sore throat and the summer complaints of children.

And, more serious than all else that may be said of raw milk,
*MILK IS A COMMON VEHICLE FOR THE TRANSMISSION
OF TUBERCULOSIS TO HUMAN BEINGS.*

Addressing the American Public Health Association, it is not necessary to cite evidence as to any of these facts; nor is it necessary to call to witness my twenty-three years' experience in preventing these diseases in New York City and elsewhere on two continents by supplying babies with pasteurized milk; nor it is necessary to cite the position of this Association as to the necessity for pasteurization, or the decision of the National Commission on Milk Standards, or the advice of the American Medical Association.

POWER AND DUTY OF MUNICIPALITY.

We have the fact that municipal government intervened and took control of the water supplies chiefly to stop the ravaging of their cities by ONE disease, typhoid fever.

My proposition is that the same policy should be followed in dealing with an article of food of universal use and necessity that is a common cause of SIX plagues.

Practically every city does undertake to see to it that the milk sold to its people is of good quality; many municipalities do endeavor to secure for their people milk that is pure and free from germs of disease.

The obligation to do this is recognized by every municipality; the extent to which the obligation is carried out varies.

The method everywhere is supervision — the method that was tried and proved insufficient in the protection of the people from typhoid germs in water.

The plenary power of a municipal government to control the supplies of milk, wherever they come from, has been recognized and upheld in decisions of the Supreme Court of the United States.

The duty of the municipality in respect to the milk supplies is no longer disputed.

POST-MORTEM REGULATION.

The only room for discussion is as to how this duty is to be fulfilled.

By ordinances that are not enforced?

By inspection that does not inspect?

By post-mortem supervision that deals with a dairyman or dealer after the raw milk has started an epidemic?

At a vast expenditure of effort a great improvement has been achieved in the milk supplies of cities. No one knows this better than I do, for I have followed this work day in and day out through twenty-three long years. I am thankful for what has been done. But yet it remains true that most of the milk sold in the cities is neither pure nor safe.

The consequence is that milk-borne diseases continue to exact their toll of human lives, particularly of infant lives.

How then shall the municipal governments meet their obligation to secure to their people milk that is pure and free from germs?

COMPULSORY PASTEURIZATION.

I would be the last to discount or criticise the action taken by New York City and Philadelphia, and contemplated or partially carried out in many other cities, in requiring the proper pasteurization of the milk supplies under municipal supervision.

This is the greatest step forward in the history of the modern war for the *prevention* of disease. It will save lives, not by hundreds, but by thousands. It means more than the adoption of compulsory vaccination, for that wrought the annihilation of smallpox, which was only one plague, but pasteurization spells the stamping out of six plagues.

I therefore want to commend in the strongest possible terms the measures taken for the pasteurization of the milk supplies in the cities named, and I want to urge with all my power the adoption of this programme by every city as necessary to the fulfillment of its duty to protect the health of its people.

But I would be less than frank if I did not admit that I look forward to a system more efficient than pasteurization under municipal supervision.

Such supervision is of necessity occasional and lacking in complete efficiency. Its history, I believe, will parallel that of a municipal supervision of the purification of privately operated water supplies. It will do much good, but finally will give way, I believe, to a system that will do more good.

MUNICIPAL PASTEURIZATION.

Absolute Municipal Control of the Milk Supplies will, I believe, be found to be the effective way, not merely to check, but to wipe out, the milk-borne diseases.

This thorough control may be achieved in two ways:

By the cities taking over the function of supplying milk to consumers just as the cities have taken over the function of supplying water to each household.

Or,

By the cities performing the function of pasteurizing the entire milk supply and delivering the milk in sealed containers to the dealers for distribution.

NO INCREASE IN COST.

Neither system means increased cost of milk, for the first wipes out the high cost of competition, with the duplication of milk routes by rival dealers, while both systems give the benefits of the economies of a few large central plants as compared with a large number of smaller plants.

As a rule the milk supplies of the smaller dealers pass through a bottling plant, which filters and bottles the milk at a charge of one cent a quart. Where pasteurization has been required such milk has been pasteurized without additional charge. Municipalities could filter, pasteurize and bottle for less than a cent a quart and thus help the small distributors.

Both systems mean fairer prices to the farmers and no higher price to the consumers.

LIVES SAVED; SICKNESS PREVENTED.

But the protection of human life is not to be measured by its cost, but rather by the amount of sickness prevented and the number of human lives saved.

This country is awakening to the excessive cost of the Great White Plague — a cost figured in millions of dollars and of lives, and in suffering and sorrow that is incalculable.

With this awakening there will come, I believe, a demand similar to that that led the municipalities to take over the function of supplying water, and as the people realize the bearing of milk upon the spread of six plagues, of which the greatest is tuberculosis, I feel quite sure that there will come irresistible insistence upon the absolute assurance of safety from these infections that can be had only in the municipalization of the milk supplies.

I think the time has come to recognize these facts frankly — the time to insist urgently upon pasteurization and to consider and work out the problem of making this protection thoroughly efficient by municipal pasteurization.

PERMITTED MURDER.

In addressing the Presidents of Health Boards of American and Canadian cities on March 22, 1897, I said:

The tragedy of needless infant slaughter by infected milk, desolating so many homes and wringing so many hearts, lies like a dark shadow on our boasted civilization. It is nothing more or less than permitted murder, for which the responsibility must lie at the door of the agencies of government that fail to recognize its existence and demand its prevention. The necessity is too great to be adequately met by private effort. Nothing short of an organization as broad as the area of milk consumption will meet the case, and this only public authority can supply.

On November 15, 1900, I wrote:

If the pasteurizing of the entire milk supply were made the function of the municipality, it would be an exceedingly clever business investment, for the money expended would be returned an hundred fold. This is looking at it from a practical commercial standpoint, besides which, from a humanitarian point of view, the amount of suffering and disease which would be prevented is incalculable.

Since then the necessity for pasteurization has been recognized and declared by the United States Public Health Service and by the representative medical and health organizations of America, and the enforcement of pasteurization has become the settled policy of the health authorities of the greatest American cities.

I pray devoutly for the forwarding of this great work, and I look forward to the time when pasteurization will be made thoroughly effective by the municipalization of the milk supplies.

That we must have pure water is recognized and we get it through municipal control; that we must have pure milk is now equally well recognized, and I believe we will get it through municipal pasteurization.

THE NATIONAL HEALTH GUARD.

STATEMENT WRITTEN BY MR. NATHAN STRAUS, DECEMBER 29, 1914.

THERE is great concern in this country these days over the question of national defense. Patriotism is stirred by the argument that America should be fully prepared to meet any emergency that might result in a clash of arms. Yet there is an emergency more fatal and more devastating than war. There is an enemy laying waste millions of homes and slaying each year some 200,000 men, women and children in this land of peace.

The enemy is unseen, but none the less powerful. Hidden in raw milk from tuberculous cows, the germ of the Great White Plague smites unsuspecting adults and defenceless children. In its trail come suffering and death, with poverty and sorrow as attendants.

What are we doing to meet and conquer this foe?

In the past year about \$20,000,000 was spent on the victims of the disease, on their care and in the effort to cure those in whom the disease had not reached the hopeless stage, but less than \$2,000,000 was spent to prevent tuberculosis.

This was an average of two cents for each inhabitant of this land!

THE MOST SERIOUS NATIONAL UNPREPAREDNESS.

Is not this national unpreparedness that throws into the shade the stirring issue of a greater army and a stronger navy?

Patriotism forbids that we should yield our rich and happy nation to any martial foe. Does not patriotism also forbid that we should sacrifice our men, women and children to a preventable plague?

Is not this an issue to stir our people deeply? Ought not our men and our women enlist for the war against tuberculosis and fight without ceasing until the plague is stamped out?

It can be done. The nation can be saved from tuberculosis. This dreaded disease can be made as rare as small-pox. It can be wiped out.

What can be done in the way of prevention has been demonstrated along the two lines on which I have worked, namely, in the pasteurization of milk, so as to cut off this source of infection, and in the establishment of preventoria in which children taken from tuberculous environments can be fortified against the disease.

These are methods of prevention that are thoroughly practical and of proved efficiency. I am convinced that upon their extensive use depends the conquering of tuberculosis.

I yield to none in urging the proper care of the tuberculous patients and I rejoice that private philanthropy and public appropriations have in the past year put twenty millions to this excellent use.

I have none but words of praise for the devoted medical men who are spending their lives without stint in the treatment of this dreadful disease.

MAKE CARE AND CURE UNNECESSARY.

But my twenty-three years' practical experience in efforts to prevent tuberculosis convinces me that the time will come when neither care nor cure will be necessary — the time when efficient prevention will lift the curse under which humanity now staggers.

Let us be up and doing for the sake of humanity.

I hope that the organization of the National Health Guard will hasten the day of the battle royal against tuberculosis, for it is a fight far beyond the strength or the means of one man — a struggle to engage the whole power of the nation.

There are many recruits being enrolled. The health officers of the greatest cities of the land are resolutely excluding the tubercle bacillus from the diet of the people. Within the past year great progress has been made, but the fight must be nation-wide to succeed. It is a campaign to stir the National Health Guard.

"Not only does the mother need her young, but this nation of ours needs the children, needs them more than ever, owing to the effect of the European catclysm upon our population."

— Nathan Straus, in Letter to Hon. Homer Folks, Sept. 21, 1915.

"In my own 24 years' experience in trying to save the lives of babies I found that the chief hindrance to securing the pasteurization of milk was not opposition, for that is usually helpful, but indifference."

— Nathan Straus, in Letter to Gov. G. W. Clarke, of Iowa, Sept. 21, 1915.

"You may remember that when King Edward was told that tuberculosis was preventable, he exclaimed: 'Then why is it not prevented?'"

"The public has been told a great deal about the discoveries that have made the prevention of many diseases possible, and now the public is beginning to ask why these diseases are not prevented. The time is ripe for prevention on a big scale."

— Nathan Straus, in Letter to Dr. John F. Anderson, on His Election as President of the American Public Health Association, Sept. 20, 1915.

ADDRESSES AND LETTERS
ON VARIOUS OCCASIONS
SHOWING THE VIEWS

of

Nathan Straus

on

HUMAN BROTHERHOOD,
PEACE AND WAR,
POVERTY, CHARACTER,
MEDICAL MEN,
HOSPITALS,
WAR PREPAREDNESS,
And Other Topics

"A BROTHERHOOD OF LIFE."

STATEMENT BY NATHAN STRAUS ON HIS ARRIVAL FROM PALESTINE
SHORTLY AFTER THE "TITANIC" DISASTER, IN WHICH
HIS BROTHER AND HIS WIFE, ISIDOR AND IDA STRAUS,
LOST THEIR LIVES.



R. M. S. "CARONIA"

May 1912

There is such a shadow of sorrow hanging over my heart that I am not in a condition to talk. But I want to take this opportunity to express my heartfelt thanks for the overwhelming tokens of sympathy which have poured forth from all parts of the world.

The one gleam of consolation I find in the darkness is the thought that it was a Jew and a Jewess who gave to the world this example of self-sacrifice, heroism and mutual love.

I have always heard a good deal of Christian love, but it is too often found wanting.

I thought that by going to Palestine to the fountain-head I should surely find it. I return more bewildered than ever at the mutual hatred of the believers in the various creeds.

Turkish soldiers of the Moslem faith guard the Holy Sepulchre to keep the peace between Greek Church and Roman; while these same Christians unite in persecuting the race from which their Saviour sprang. "Love one another" went forth the mandate from Jerusalem, and how pitifully has it been forgotten. Will it ever be thus?

In the "Titanic" tragedy all creeds were at least united in the brotherhood of death.

If one could only hope for a brotherhood of life!

Why wait for death to teach us the lesson of human fraternity?

PROTEST AGAINST WAR.

ADDRESS BY MR. NATHAN STRAUS ON MAY 7, 1905, AT THE UNVEILING
OF THE MONUMENT IN SALEM FIELDS CEMETERY, BROOKLYN, IN
MEMORY OF JEWISH SOLDIERS WHO LOST THEIR LIVES FOR
THE UNION IN THE CIVIL AND SPANISH WARS.

WE meet to honor the Jewish soldiers and sailors who sacrificed their lives for their country. Others will speak more eloquently than I can of the debt owed by the living to those who died for the sake of duty. But while I yield to no man in my admiration for those who have sacrificed their lives in defence of their country, I shall protest to Heaven against war, and speak for peace. These dead whom we honor remind us that war is a barbarism against which every man should raise his voice in this age.

War is only legal murder and while we honor the dead martyrs, we should protest as civilized men against their death and the continuation of wholesale slaughter which still disgraces the earth.

Our common sense refuses to let two men settle their quarrels with the knife or the pistol.

The common sense of humanity should forbid nations to settle their quarrels with cannon and dynamite which ruins homes and makes fatherless children. I protest in the names of the mothers of the world against this needless shedding of the blood of their sons.

Two men with a quarrel must go before the court and abide by the law's decision. They are not allowed to cut each other's throat. Two nations with a quarrel should be compelled to arbitrate and accept the decision. They should no longer be permitted to dig uselessly millions of graves for brave men.

If any ruler of men wants war let him be kept in the front line of the fight as long as the war lasts.

War is often brought about by the vanity of individuals, not by the necessity of nations, and wars would be few if the men who start them were compelled to receive the first bullet fired.

How can we call ourselves civilized when we spend unlimited millions for organized military murder, and grudge the money that would save the health of nations, the lives of millions of children.

The United States proposes to spend \$200,000,000 every year and perhaps more for fighting battle ships.

Think what that gigantic sum could accomplish if it were devoted to the health of humanity and not to murder.

Such a sum would wipe out consumption, which, more deadly than any war, costs the United States 200,000 lives each year.

Such a sum would save every year the lives of hundreds of thousands of children who die because their dwellings are filthy, their food impure, their bodies neglected.

War keeps alive brutality; poverty and disease are its brother and sister.

Every year in Europe more than two thousand millions of dollars are spent on armies and navies that are merely brutal organizations for murder.

Nations in war and in preparation for war squander the resources that would give us real civilization if the thousands of millions that are devoted to killing were devoted to uplifting the race.

Let us honor these men, who died for their fellow men.

Let us honor them especially in protest against needless death, wasted possibilities.

No nation can act alone in this matter. The peaceful men must go armed among murderous thugs, for the sake of peace itself.

THE JEW HAS A WORK TO DO.

I HAVE stayed in the city to-day to be with you. I wanted to do my part to celebrate this day, because it is one of vast significance to our race, as well as to our country.

Only three times have I addressed my own people in public meetings. The first occasion was when we were raising a regiment of Jews for the Spanish-American War. The second time was when we unveiled a monument to the Jewish heroes of that war. And this is the third time that I have talked face to face with an assemblage of Jews.

I wanted to be here to-day for two reasons. The patriotism of the Jews needs no proof, but the devotion of our people to the Stars and Stripes needs to be emphasized for the benefit of the whole nation.

And the Jews have a work to do in the world, not merely in fighting for toleration for their own race, but in advancing the cause of religious freedom throughout the world.

With all the nations of the earth forming this nation, the Jews have an unique advantage. Our race is found among nearly all of the foreign peoples who are making their homes in this country. So we are peculiarly fitted to be the blending force, the unifying influence, and thus to promote the amalgamation of them all into one strong, hopeful, patriotic people.

Then there was a time when we had to fight in many nations for the bare right to live. We still have this fight on our hands in Russia. Only in darkest Czardom does prejudice still hold sway against the Jew. But real religious freedom has not yet been won, and it is for the Jew to lead in this fight, not for himself, but for all others.

There is that great Christian leader, Rev. Dr. Robert MacArthur, who is going to Russia to battle for the rights of the Baptists.

His brave fight against religious intolerance ought to interest us as much as the struggles of our own people. Our stand ought to be that expressed in the Constitution of the United States and in the Declaration of Independence. Liberty to worship God according to the dictates of his own conscience is the absolute right of every man. Wonderful progress has been made in securing the recognition of this right, since these United States became an independent nation.

We do not have to fight for this right in this country, but we do have to make the benefits of this enlightened policy clear to other older nations. The Jew should stand side by side with the Christian in spreading the doctrine and practice of religious liberty in all lands.

THE TRAGIC FIGHT FOR THE PUBLIC HEALTH.

STATEMENT BY MR. NATHAN STRAUS, JANUARY 20, 1909.

THAT there is a small corps of intrepid and highly trained medical men engaged by the United States Government to ceaselessly wage warfare upon contagious and infectious diseases so as to shield the public from the plagues that menace humanity — that there is such a corps of 128 men is a fact too little known, for their work is not done to the sound of the bugle or the beating of the drum.

Yet this corps is the advance guard of health in the United States, steadily striving to prevent epidemics and rushing into the thick of the fight whenever there is an outbreak of disease, so intent upon the work of saving their fellow men that forty of them have been stricken down at their posts by the disease that they have been fighting.

Such is the Public Health Service of the United States under Surgeon-General Walter Wyman. It maintains twenty-one hospitals and 141 relief stations for American seamen, forty-three quarantine stations and the Hygienic Laboratory at Washington, under Director M. J. Rosenau, the center of the advance work of this corps in preventing epidemics.

In the discovery and application of the methods of dealing with yellow fever that have practically abolished that scourge, nineteen members of the corps fell victims while combating the disease and seven of them died; eleven have contracted tuberculosis in combating the great white plague, and three of these are dead; smallpox left its marks upon two of the corps, who were among the leaders in the gallant fight that has about exterminated that pest.

In its recent study of the milk problem that led to the famous Bulletin 41. "Milk and Its Relation to the Public Health," four fell victims to typhoid fever, two of them by their deaths sealing their witness to their exposure of the perils of raw milk and their warning that the milk supplies should be pasteurized in order to prevent the milk carrying the infections of typhoid and scarlet fevers, diphtheria and tuberculosis.

Four other members of the corps contracted tropical dysentery in line of duty.

So literally true is it that the members of the Public Health Service take their lives in their hands in the performance of their daily duties, that the insurance companies, with two or three exceptions, refuse to insure members of the corps, and the number of applicants for positions in this service has fallen in twelve years from forty-two a year to seven.

Yet last year, when Congress raised the pay of the other medical corps — of the army, navy and revenue cutter service — the Public Health Service was passed over, the salaries remaining at the low level of 1889 in the face of the increase of 36 per cent. in the cost of living.

What this means is illustrated by the case of Dr. Blue, who has been combating the bubonic plague at San Francisco with such success that there has not been a new case since January 30, 1907. He superintends the work of a thousand men and holds the health of a great city in his hands, yet his salary is only \$2,600 a year after thirty years' continuous service in the corps.

This adds to the tragedy of the fight for the public health, for with such meager earnings and without possibility of getting insurance, there is no way to provide for widow and children. Dr. W. W. Miller, who died investigating typhoid fever last November, left a young wife and baby daughter.

With the certain knowledge that they are courting death, these men are bravely doing the pioneer work of protecting the public from disease and are making epidemics more and more infrequent by their dangerous investigations and by their gallant services wherever outbreaks do occur. But a bill that would distribute the comparative trifle of \$50,000 among 128 men in salary increases was allowed to fail of passage.

THE FEDERAL HEALTH AGENCIES.

A LETTER BY MR. NATHAN STRAUS TO PRESIDENT TAFT, APRIL 7, 1909.

IT has been a matter of profound satisfaction to me that you have signalized the first month of your administration by an act of far-reaching effect, and of incalculable importance to the people of this country, in directing Surgeon-General Wyman to draft a plan for the consolidation of all the government agencies for preservation of the public health.

In my long fight against the needless slaughter of the babies by infected milk such as is commonly sold throughout the world, especially in the cities, I have felt seriously the need for a federal bureau of public health properly equipped and fully empowered to protect the public from needless diseases.

President Roosevelt's order directing the Public Health Service to investigate the relation of the milk supplies to the public health disclosed a bureau admirably equipped, splendidly officered and provided with able experts. The result was a report, the most important ever issued, upon the question most vitally affecting the future of this country, which depends in very large degree upon preserving the lives and insuring the health of the babies. But the Public Health Service lacks the power to enforce its findings.

Under Secretary Wilson's sagacious leadership the bureau of chemistry, as administered by Dr. Wiley, has ably begun the enforcement of the pure food law, and Drs. Mohler and Schroeder have led the whole world of science in their demonstrations of the communicability of bovine tuberculosis to man.

The Department of Commerce and Labor has effectually prevented the importation of diseases in connection with immigration, and the War Department has shown the world what can be accomplished by modern sanitation, while the Public Health Service has practically exterminated yellow fever and the bubonic plague.

The combination of these admirable agencies in one national health bureau, such as would result from the expansion of the powers of the Public Health Service and the inclusion of the other agencies, would be an achievement for the public good such as would surpass in its ever-increasing and lasting effect any other benefit that you would confer upon the nation that has placed the powers of government in your hands.

There is no way in which greater good can be done to humanity than by protecting health and saving lives, by warding off disease and preventing death. The recent disclosure of the decline in the birth rate in America, as vividly shown in the shortage of 26,000,000 births in the past century, adds urgency to the cause that you have taken up in your instructions to Surgeon-General Wyman. May your good purpose meet with such instant and hearty support in Congress that the work of saving the lives of the babies may be begun without delay. May your national health bureau speedily grapple with tuberculosis, typhoid and other needless plagues.

This is a great work, upon which all men of all parties ought to unite their energies for the common good.

THE ROCKEFELLER FOUNDATION.

REPLY BY MR. NATHAN STRAUS, MARCH 3, 1910, TO AN INQUIRY.

IN response to your inquiry as to my opinion of the great philanthropic plan of John D. Rockefeller—

I feel that the establishment of the Rockefeller Foundation is the most important single step ever taken in human progress from primitive simplicity to highly developed civilization.

That degree of civilization to which the leading nations of the earth have attained is far short of the ideal, for we must abolish poverty, ignorance and preventable disease before we can regard the condition of humanity as in any measure perfected.

Hitherto the means and measures that have resulted in human progress have been sporadic, incomplete and unsystematic. The world has gone forward, but it has been with the lumbering motion and slow movement of the stage coach.

It has remained for Mr. Rockefeller to conceive the stupendous plan and provide the resources to marshal, co-ordinate and organize the forces of progress. The vast work that he has been doing for humanity, and that has been too little appreciated, is completely outdone and overshadowed by this new creation of his philanthropic heart and brain, which, I believe, will be found to be the greatest manifestation of his genius for constructive organization and will rank in history as the most remarkable example of far-seeing statesmanship.

The measure of the Rockefeller Foundation will not be the millions that he will devote to the work, but the breadth of its scope and its perfect adaptation to the yet unknown needs of future generations. To give requires merely money; to plan for humanity, as Mr. Rockefeller has done, betokens inspiration born of profound and sympathetic study of human needs.

THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.

LETTER TO MR. JOHN D. ROCKEFELLER, DECEMBER 15, 1913.

IT is distressing that the campaign against vivisection should be directed against the most important work ever undertaken by the world's greatest benefactor for the alleviation of human suffering. The achievements of your Institute mean so much in the prevention of sickness and in the saving of human lives, that one would think that the loquacious voice of criticism would be stilled by the thought of hundreds of thousands of hearts saved from grief and hundreds of thousands of lives preserved.

But I cannot help feel that all these mistaken attacks upon the crowning work of your life will but serve to advance the cause in which you are laboring. It has always been so in my own work for the babies. Every attack visited upon me in my twenty-three years' effort to save babies from tuberculosis and other milk-borne disease by pasteurization of the milk supplies has been turned to the advantage of the cause and has served to make more clear and more widely known the truth that I have endeavored to teach.

I hope that you accept these attacks in the same way, feeling that the futile fury of opposition can never really hinder a cause that has for its purpose the alleviation of the ills of humanity.

TRIBUTE TO DR. TRUDEAU.

LETTER WRITTEN BY MR. NATHAN STRAUS ON JANUARY 28, 1910, IN
CONNECTION WITH THE TWENTY-FIFTH ANNIVERSARY OF THE
OPENING OF THE ADIRONDACK COTTAGE SANITARIUM
BY DR. EDWARD L. TRUDEAU.

NO fact connected with the fight against tuberculosis has given me such satisfaction as the rise and progress of Dr. Trudeau's great work. I have often spoken of the Adirondack Cottage Sanitarium as the inspiring cause of the great campaign against the White Plague that is now in successful operation throughout the world.

There are now nearly seven hundred institutions in this country treating tuberculosis, restoring to nearly normal health fully one-third of their hundred thousand patients, and all this beneficent work is the result of the example, the self-sacrifice and the success of Dr. Trudeau.

There are now over 400 organizations scattered throughout the United States, with 40,000 members, devoting their time and their means to efforts to prevent tuberculosis and to relieve those who are victims of the dreaded disease, and all this humanitarian work has been inspired by Dr. Trudeau. I hope that he may live to inspire yet greater achievements in the warfare against tuberculosis and to see that widespread appreciation of his wonderful work that he so richly merits.

I can add nothing that better expresses my deep appreciation of Dr. Trudeau, except to say that there is no name that is oftener on my lips, and that I always speak of him as the one pioneer philanthropist and scientist to whom, more than to any one else, the world will owe its ultimate release from the terrors of the White Plague.

TRIBUTE TO SENATOR GALLINGER.

AS a long-time friend and admirer of Senator Gallinger I hope that I may be permitted to add a word of appreciation to the tributes that the people of Washington intend to pay to this prince among men on the occasion of his seventy-fourth birthday anniversary on March 28.

In all my acquaintance with public men, I have never met one more sincerely devoted to the public interest than the senior Senator from New Hampshire. Crossing the Atlantic with him one summer I had unusual opportunity to observe the spirit in which he exercised the powers entrusted to him by the people of his state. It was clear that the Senatorship was a task at which he labored indefatigably and a trust that involved grave responsibility.

It was also clear that he regarded his duties as Chairman of the District Committee as of the utmost importance and that his labors for the District were labors of love. The District was his pride and his care, and a surprising part of his time was devoted to thought and effort in behalf of the capital city, yet he never seemed to feel that he was doing anything extraordinary in devoting twenty years of his life to this work.

Each time that I have had opportunity to observe closely the work and the character of Senator Gallinger, I have been impressed with the fact that he was a remarkable example of the modesty of greatness and of the greatness of modesty, and I have often thought what a splendid thing it would be for this country if there were more such men in the high places of public responsibility.

It seems to me a very happy thing that the people of the District of Columbia are appropriately recognizing Senator Gallinger's services, and I believe that I will be expressing the wish of thousands in uttering the hope that he may be preserved to preside for many years over the municipal affairs of the capital.

— Nathan Straus, in letter on the occasion of a dinner to Senator Gallinger, of New Hampshire, March 20, 1911.

THE CONTROLLING MOTIVE OF MY WORK.

(Written by Mr. Nathan Straus for the "Christian Herald," December, 1913.)

I HAVE been asked an intensely personal question, namely —
"What is the controlling motive of your work?"
I might say that it is the deep seated feeling that all humanity is of one blood, that whatever the accidents of birth or the circumstances of religious faith, we are all brothers, and should help each other to the full extent of the opportunities that the One God of all mankind gives to each of us.

Possibly this statement may explain why I have always refused to allow any sectarian lines to be drawn in the humanitarian work that I have undertaken, feeling so strongly that all men are my fellow men and that I had no right to make any distinction between Jew and Gentile in my efforts to prevent sickness and death and to ward off suffering and grief.

Candidly, as a Jew, I have often felt that I owed this apology or explanation to my co-religionists, for the fact is that I have done a great deal more for Christians than I have for Jews. But when, as a Jew, the impulse has come to me to do more for my own people, the controlling thought has been that the God of all mankind does not draw any racial or religious lines in the distribution of his bounties, and that it would be narrow and presumptuous for a mere man to set up any prerequisites of faith in deciding who should be the recipients of benefits that God had put it in his power to bestow upon his fellow beings.

In this spirit I have sought to do what I found at hand, as, for example, in the relief of poverty in this city during the great panic of 1893, when I provided coal, food and lodging for many thousands without any question as to their faith, fully ninety per cent. of those relieved being Christians. And again, at the time of the great coal strike in Pennsylvania, few if any of those benefited were Jews.

So, too, in the work that I have carried on for twenty-three years, in teaching the necessity for the pasteurization of milk and maintaining infant milk depots in New York and in other cities in two continents, the controlling motive has been to help all the babies, whether or not they were the children of the race of Israel.

And in the work that I consider my greatest, the conceiving of the idea of snatching children from tuberculous environment and the founding of the Tuberculosis Preventorium for Children, my firm purpose was that the benefits of this institution should be open to all the children of the city who might need to be rescued from surroundings in which they were likely to become victims of the great white plague.

So, too, in the work that I have undertaken in Palestine, the fatherland of the Jews, there is no sectarianism. The hungry are fed, whether they are Jews, Christians or Mohammedans. The work of sanitation now under way in that land is designed to make it a healthier place for people of all religions. The providing of pure water supplies is for all the races and religions that are represented in that beautiful country that is the "Holy Land" to Jew and Christian alike. The industrial

schools are for all who seek to rise from helpless dependence to self-respecting self-support.

It is not Zionism, not Judaism, but Humanity that beckons me to the land that cradled the two great world religions, for there, amid the scenes that inspire religious devotion as do no other scenes in the whole world, there where humanity is lifted close to God by the fervor of religious devotion, one finds also the most acute poverty, the most intense suffering, with sickness terribly prevalent and blindness the portion of thousands of babies.

True, it was the religion of my forefathers that drew me to Jerusalem, but it was the suffering of our common humanity that stirred me to action, and it is for that humanity that I am laboring, without regard to the religion of any one who may be benefited, and it is in this work of improving the condition of the people of a city more cosmopolitan than New York, a city that shelters the devotees of all religions, that I would enlist the interest of the peoples of all races and religions.

Briefly, the work now under way in Jerusalem consists of soup kitchens at which 330 people are fed daily; a mother-of-pearl factory employing 80 men and 25 girls; a nurses' settlement which is the centre of the work of teaching the people the elements of hygiene and, with the aid of a specialist, is combating tracoma, which scourges thirty per cent. of the people; a household school in which the girls are taught how to become better wives; a street cleaning system; the Health Department for Palestine in which six nations are co-operating; the Pasteur Anti-Hydrophobia Institute, and the work of providing pure water supplies.

The last is the biggest need of Jerusalem. Now water is terribly precious because it is so scarce and what there is comes from surface pools impregnated with the germs of disease. But there is abundant pure water to be had by sinking wells and pumping it up. To install a modern system will require \$100,000 a year for five years.

And this work will benefit not one race, but all races; not one religion, but the people of all religions, for here gather the pilgrims from all the lands of the earth, and here in the Holy City we ought to realize our common brotherhood. As I said at the time of the Titanic disaster:

"In the Titanic tragedy all creeds were united in the brotherhood of death. If one could only hope for a brotherhood of life! Why wait for death to teach us the lesson of human fraternity?"

WHAT THE NEWSPAPERS CAN DO.

As laborers in the cause of the good of the public the newspaper men of the country occupy an unique position, content with small rewards and exercising vast influence. It has been the unselfish zeal of the Press that has advanced each movement for the betterment of mankind and of the country.

Now the protection of the health of the people rests with the newspapers, for science has done its work of discovering the dangers to human life and the methods of preventing such sicknesses as tuberculosis and other ills that lurk in infected milk.

No greater service can be rendered to the public than thus to wipe out the chief causes of human care and grief. I have shown in my 18 years' work how pasteurization of milk invariably cuts in half excessive infantile death rates. The application of my experience to the good of mankind at large is beyond the capacity of one man. But I believe that the patriotic, public spirited press will carry on the work.

— Nathan Straus, in Letter to Illinois Daily Newspaper Association, May 15, 1909.

THE MEDICAL PROFESSION.

AN APPRECIATION WRITTEN BY MR. NATHAN STRAUS FOR "THE
MEDICAL REVIEW OF REVIEWS," APRIL 12, 1915.

IT does seem to me that it is unfortunate that attack is so much more common than praise. This is particularly regrettable when the shafts of criticism are aimed at a profession whose members day after day lay all humanity under obligations to them at the risk of their own lives. All the honors that are given so spontaneously to the heroes of the battlefield ought to be accorded without stint to the brave medical men who fight without ceasing against the greatest foe of humanity, disease. I have always, throughout my twenty-four years' struggle against preventable diseases, sought to give full credit to what physicians have done to make possible the present world-wide war against disease, for I have considered it a public duty to sustain them in this fight.

It appears to me that the medical profession is now entering upon the greatest phase of its history in the development of the science of preventing the plagues that afflict humanity, and it is certain that in the pursuit of this blessed work physicians will win such overwhelming popular approval as to still the voice of the scoffer.

OPPORTUNITY OF THE MEDICAL PROFESSION.

LETTER BY MR. NATHAN STRAUS TO DR. W. C. GORGAS, PRESIDENT
AMERICAN MEDICAL ASSOCIATION, JUNE 8, 1909.

IT is with great delight that I write to congratulate you on your accession to the Presidency of the American Medical Association, for I recognize in you the most brilliant exponent of the science of preventing sickness, and I believe that your administration will be marked by great progress in forestalling the unnecessary illnesses that, according to Prof. Fisher, kill one person in this country every two minutes.

Important as is the art of healing, the prevention of sickness is more to the glory of the medical profession and more to the benefit of mankind. Science has shown how many of the most serious ills of the flesh may be practically abolished, but the practical application of this life-saving knowledge awaits the earnest encouragement of the leaders in your profession.

What you have done in Panama in reducing the death rate to about one-third of what it was a few years ago, can be done the world over, and will be done when the measures resorted to by you in the Canal Zone are adopted and enforced by health officers of cities and states.

One of the measures that contributed to your remarkable achievement, I believe, was the pasteurization of the milk—a measure of prevention against the milk-borne diseases that I have been earnestly advocating the past eighteen years and practically applying by supplying pasteurized milk for babies at my depots in this city and elsewhere, with resultant reduction in the infantile death rate. At Sandhausen, Germany, where I supplied the milk for all the babies, the death rate was reduced to less than half the average for the preceding five years.

I hope that your work in your new office will include the bringing of the medical profession to a better understanding of the undoubted value and practical necessity of pasteurization, for it is unhappily true now that many medical men, educated at a time when prejudice against pasteurization prevailed in medical schools, have not kept abreast with science and do not know that the process has been thoroughly vindicated and has been shown to save many lives and to work no harm to the milk.

DR. OSLER'S CALL TO HIS PROFESSION.

LETTER BY MR. NATHAN STRAUS TO DR. WILLIAM OSLER, REGIUS
PROFESSOR OF MEDICINE, OXFORD, MARCH 19, 1911.

IT is a great encouragement to a layman who has been trying to do his part in the prevention of disease to find such strong words written by the most eminent exponent of modern medicine in your article in *The American Magazine*. In all my twenty years' campaign against the milk-borne diseases I have expressed the most profound admiration for the heroic services rendered humanity by the medical profession, and I have marveled at the courage of men who have taken their lives in their hands in their daily battle with disease.

But I felt that the men who cure sickness could render even greater service to mankind by leading along practical lines campaigns for the prevention of disease, and it has been a great satisfaction to me that you have used your influential position in the world of science so energetically in this direction. I am sure that your trumpet calls to the world to war against the modern plagues at their very source, instead of being content to minister to the sick at the bedside, will bring results undreamed of—that the diligent warfare against the causes of tuberculosis will bring that plague under control, and will ultimately make consumption as rare as small pox.

I am writing at this time because of the halting attitude of the National Association for the Study and Prevention of Tuberculosis on the question of the prevention of the great white plague. While the Association last year did officially recognize tuberculous milk as a factor in the spread of the disease, the resolution was vitiated by a paragraph minimizing this fact, and the articles sent out by the press bureau of the Association either ignore or practically deny the truth so well put by you in the *Woman's Home Companion*, namely, that tuberculous milk is one of the two great causes of tuberculosis. Now, your influence in that Association is greater than that of any other man, and I venture to suggest that you could set forward the work of preventing this disease by a characteristically vigorous statement of the truth at the coming meeting of the Association.

THE CLINICIANS AND THE LABORATORY MEN.

LETTER BY MR. NATHAN STRAUS TO DR. W. A. EVANS, CHICAGO,
JUNE 20, 1912.

WITH the exception of such men as Dr. Jacobi, the professors of the clinics are usually men wrapped in the idea of treating diseases—so much absorbed in this idea that they are impervious to the greater idea of preventing disease.

Possibly this is the reason why the help that I have had in my work for the babies has come chiefly from the laboratory men of your profession. They have been the men who have gone past the effect to the cause, who have striven and studied and searched out methods of prevention.

On the other hand, the most serious and persistent opposition that I have had has come from the clinical men. And in each case of such opposition, in the final analysis, the trouble with my opponents has been that they could see no way and could approve of no way of dealing with disease except by prescription.

While I honor the practitioners of medicine for what they are doing in dealing with disease, it is to the laboratory men that we owe what progress has been made in preventing disease and it is to them that we must look for the victories of science that will ultimately free the human race from much misery and suffering.

HOSPITALS.

SPEECH BY MR. NATHAN STRAUS ON JEWISH HOSPITAL NIGHT, MAY 4,
1915, UNDER THE AUSPICES OF THE BROOKLYN
FEDERATION OF JEWISH CHARITIES.

THAT you are charitable, that your hearts are in the cause, your presence testifies. I am the poorest man to beg, and this is the first time that I have appeared in that role in New York. Heretofore I have always done things without any assistance. But these are extraordinary times and require extraordinary efforts, to open your hearts and purse strings. I am certain that after you have been made to realize the great needs, you will show your appreciation of being spared and of living in this blessed and peaceful land, by helping those who are so much in need of your help and sympathy.

If people by the thousands are driven from their homes, cruelly handled and robbed of their possessions — how would you feel? Draw on your imagination. I, for one, can hear the shrieks of the mothers and the children deprived of their bread winners, of their homes and their daily bread. I can feel their heart aches in their helpless conditions.

It is not a vain flight of the imagination that we are all brothers and sisters. That the burdens and sorrows, the difficulties and dangers from which our fellow-men are suffering, must be recognized as our common burden, as our own sorrow and our problem.

I do not need to applaud your work in establishing this hospital. Its service to suffering humanity will be your applause. There is no incense more fragrant to God or man than a work of mercy. To no one is the doing of a good deed so full of joy as to the doer of it.

I have built no hospitals. I have endowed none. I have not given great sums to their maintenance. So I am as one who looks on from the outside, and I envy you the satisfaction of easing the pains of suffering men, women and children and curing their bodily ills.

But I have keen sympathy with your work, though my own efforts have been in a different direction. Indeed my endeavors have been in a certain sense diametrically opposed to yours.

My life work has been to keep people out of hospitals. I have tried with all my might and means to make hospitals unnecessary. My plan has been to remove the causes of sickness — the tiny germs that are the seeds of disease and death.

I have been at this work twenty-four years. Now the pasteurization of milk is being generally adopted and enforced. This is removing a common cause of six plagues — tuberculosis, typhoid and scarlet fevers, diphtheria, septic sore throat and the summer complaints of babies.

It was the effort to prevent disease that I carried farther in 1908 when I conceived the idea of the Preventorium that I founded at Lakewood, N. J., and that soon thereafter was provided with a permanent site at Farmingdale, through the generosity of Mr. Arthur Brisbane, who has been a tower of strength in all the long battle against the causes of disease.

There were the children born and brought up in tuberculous environments, susceptible to this infection, certain to become victims. Their pitiful condition was a load upon my heart. It seemed to me that they could be rescued from tuberculosis by being taken into the country and fortified by nourishing food and life in the open.

This was how the Preventorium plan developed in my mind. Maybe it was in my heart. I succeeded in having the plan tried out, and it has worked. The Preventorium that I originated has in a few years saved hundreds of children from the Great White Plague and the plan has been copied in more than a score of similar institutions.

I speak of this work here and now because it has direct relation to your work. The demand for hospitals is increasing day by day. It is so great that it can be met only in part. The only solution is to cut down the demand for hospitals. This can be done only by PREVENTION.

I hope that the day will come when we will need not more, but fewer hospitals. I hope that the day will come when the prevention of disease will be so efficient that there will be far less need to provide for the care and cure of the victims of sickness.

Meanwhile it is a splendid thing that good-hearted men and women unite in establishing and maintaining hospitals, but I beg of you, while you are providing beds and doctors and nurses, to lend your influence and encouragement to the work that others of us have undertaken in trying to prevent disease.

With the greatest possible respect for the man able to cure disease, I would say that my interest lies not in this work. My mind is upon the problem of the prevention of disease. I should rather make hospitals unnecessary, than aid in the building of hospitals. I should rather make curative medicines unnecessary, than invent the greatest cures that the world has heard of.

— Nathan Straus, in interview in Washington, D. C., October, 1908.

POVERTY.

I HAVE just seen your striking sermon on "The Duty of the Municipality to the Unfortunate Poor," and I hope that it will bear fruit in practical recognition of the responsibility that rests upon city officials as well as upon those who by their wealth are able to help their less fortunate fellows.

There is in this world, in this intensely practical age, entirely too much of a disposition to regard poverty as a crime, or as a penalty that one has brought upon himself, and to fail to recognize that it is often the result of conditions over which the victim has had no control whatever.

From twenty-one years' practical experience in the work of protecting the babies, I have been convinced that the greatest of all causes of poverty is sickness, and that the most effective of all the remedies for poverty is the prevention of disease.

No duty, it seems to me, is more particularly the obligation of the municipality than the deliverance of its people from the known causes of disease, such as raw milk with its live germs of tuberculosis, scarlet and typhoid fevers, diphtheria and summer complaint.

I would like to see this subject handled by a man of your grasp and eloquence.

— Nathan Straus, in letter to Rev. J. D. Herron, Hartwell, Ohio, Jan. 24, 1912.

TRIBUTE TO DR. JACOBI.

SPEECH BY NATHAN STRAUS AT TESTIMONIAL DINNER IN HONOR OF
THE 85TH ANNIVERSARY OF THE BIRTH OF ABRAHAM JACOBI,
GIVEN AT THE HOTEL ASTOR, NEW YORK CITY, MAY 6, 1915,
UNDER THE AUSPICES OF THE BRONX
HOSPITAL AND DISPENSARY.

NEITHER the moon, nor the stars, can add to the glory of the sun.

Neither physician, nor layman, can add to the grandeur of the greatest pediatricist whose name has glorified medical history.

At four-score and five years he is going about saving lives and he has been doing this very thing in this city for three-score and two years. What a record.

The Talmud says that the whole world believed that the souls of men were perishable, and that man had no preeminence above a beast, till Abraham came and preached the doctrine of immortality.

It was this later Abraham who came preaching the doctrine of the preservation of babies' lives through the prevention of disease.

He was my inspiration, my counsellor and friend, and I come here to lay at his feet whatever I have been able to do in bringing about the pasteurization of milk and in establishing the Preventorium.

I come here to offer my twenty-four years work in saving babies' lives and in preventing tuberculosis as tribute to the man who inspired it all, to Abraham Jacobi, the Father Abraham of the twentieth century.

Out of the loins of the first Abraham sprang a great people. Out of the brain and heart of this second Abraham came the greatest development in all the centuries of medical history — the saving of the lives of babies.

Wonderful indeed are the ways of God. In 1851 to 1853 a young Doctor of Medicine from Bonn is under detention in Germany for "high treason." In 1853 he is practicing medicine here. His high political impulses were thwarted, but only to turn his insatiable energy to higher account. It was not for him to promote liberty in his native land. It was for him to save lives in all lands. There is a nobler word than patriot. It is as saviour of babies that I hail Abraham Jacobi.

WHAT MEDICAL MEN CAN DO.

I want to say to you that I think that the public is under obligations to you for your straight-forward talk to members of your profession in which you laid stress upon the duty of the physicians to educate the public through the newspaper press as to what can be done to prevent disease.

Medical men do such wonderful good in this world, at such constant peril to themselves, in their exposure to infections, that humanity owes them much. But it is very true that the debt would be increased a thousand-fold if in addition to their work of cure they would teach the people how to prevent the unnecessary sickness that bring such griefs into the world and cut off so many promising lives.

— Nathan Straus, in Letter to Dr. Stephen H. Blodgett, Boston, Jan. 20, 1914.

THE ABOLITION OF WAR.

LETTER BY MR. NATHAN STRAUS TO THE HON. THEODORE MARBURG,
SECRETARY AMERICAN SOCIETY FOR JUDICIAL SETTLEMENT
OF INTERNATIONAL DISPUTES, JUNE 18, 1912.

I AM so heartily in sympathy with the objects of your Association that it gives me great pleasure to co-operate with you in the effort to promote the abolition of war. I therefore enclose herewith my subscription for life membership, one hundred dollars.

Time was when the ideal of progress was to beat the swords into plowshares and the spears into pruning hooks. The time is now when the vast annual expenditures for the war establishments of the nations ought to be diverted to the practical benefit of the human race.

Instead the world powers are competing feverishly in providing equipment for making war, spending millions upon engines for the destruction of human life and in training and maintaining men to use this costly equipment in killing other men.

The noisy advocates of expensive armament seek to justify their programmes by saying that they seek to prevent war by being prepared for it. Is it not true rather that a club tempts its owner to violence? Did not our idle army tempt us recently almost to verge of war with Mexico? Would we be so close to intervention in Cuba if we did not have the third navy in the world?

Is it not true rather that we create great armies and navies because the savage instincts survive in us? Warfare is a human weakness.

To abolish war we have to embark on a war that will swallow up war. To turn men's minds from the triumphs of carnage, I have long urged them to take up the warfare against the enemies of the human race, to expend their money and their energy in battling against the diseases that work far greater havoc than all the engines of war.

This warfare has been left to philanthropy. It ought to engage the energies of governments. With a tithe of the annual outlay for means to kill men tuberculosis could be abolished, typhoid fever could be made as rare as small pox, the infectious disease of children could for the most part be abolished. Could we not make more headway toward peace by embarking upon this warfare on behalf of humanity?

THE PEACE OF THE WORLD.

LETTER BY MR. NATHAN STRAUS TO THE HON. SETH LOW, CHAIRMAN
NEW YORK PEACE SOCIETY MASS MEETING, JANUARY 10, 1913.

I REGRET that I will be unable to accept the invitation to attend the mass meeting of the New York Peace Society at the Brooklyn Academy of Music on Sunday afternoon, as at that time I will be in Philadelphia in attendance at the celebration of Dr. Krauskopf's 25th anniversary.

But I want to express through you my intense interest in the great work of promoting the peace of the world.

It seems to me most extraordinary that in this day of boasted enlightenment the nations of the world should be spending countless millions in maintaining great machines for the killing of men, while they haggle over the expenditure of small sums for the destruction of such real foes of the human race as the germs of tuberculosis and typhoid fever.

If but a tithe of the annual expenditures for the war establishments of the civilized nations were to be devoted to measures for the prevention of disease, how much human misery might be averted, how many lives might be saved, how much happier and better the world might be.

I earnestly hope that this Peace Movement will not rest content with striving to abolish war, but that it will divert the energies of the nations to the saving of lives.

"PEACE" THE ONLY WORD FOR VETERANS.

ADDRESS BY MR. NATHAN STRAUS AT THE MEMORIAL SERVICE OF
THE HEBREW UNION VETERANS' ASSOCIATION, JUNE 15, 1915.

THE only word to speak to the veterans of the American wars is
PEACE.

You served your country and honored your race — you who fought in the Civil War — you who fought in the Spanish War. Neither was a war of conquest. America has never waged such a war. You fought in the 'sixties to bring peace and unity to a distracted nation. You fought in the 'nineties to give peace and prosperity to Cuba, Porto Rico and the Philippines.

Every deed of valor in both these wars was in the service of peace.

Why did Moses go up alone into the mountain? It was that he might receive from the Almighty God the Law of Peace. He came down and led the Children of Israel to the Promised Land.

Recently our President withdrew himself from his official advisers and shut out all the clamorous noise of a people demanding vengeance for a great and tragic wrong. As lonely as Moses on Mount Sinai, the President pondered. No one knows the story of those three days and nights in which the President laid before the Great God the burden of his responsibilities to a hundred million people. But when he emerged from his solitude the light of a great purpose suffused his face. His first words were of PEACE.

And so like Moses he took up his duty of leading a great people through the wilderness of a war-troubled world to the promised land of peace.

And so like the Children of Israel we must follow and sustain him, our President, Woodrow Wilson, and our great advocate of peace — the Secretary of State — William Jennings Bryan.

Peace does not mean weakness. It means firmness. Was ever a state document produced in a great crisis so temperately firm as the note sent across the seas by the President the past week? As a two-edged sword it cuts away all confusion and uncertainty and prejudice and submits to the conscience of a great people the law of peace and of humanity.

No diplomatic document ever issued in the history of the world rises to the high plane of the President's note. It puts human rights above national ambitions. It puts peace above pride. It puts right above might. It puts peace above war.

This has never before been done by any great and powerful nation. Woodrow Wilson has done it.

In doing this great thing, doing it firmly and with no suspicion of fear or weakness, the President has embodied the conscience of the American people.

Will he settle this great crisis without war? I firmly believe he will, with our support, our sympathy, our prayers.

Yea, he will do this, please God, and I venture to believe that he will do more. I have deep down in my heart an abiding faith in the power of right thinking. I believe that the message to Germany will cause a whole lot of right thinking not only in this country, but in Germany and in the lands of the Allies.

And I verily believe that when all these peoples get thinking right there will be an end to this awful war that is devastating the world.

As the Law of Right that came down from Sinai in the hands of Moses has ruled all the world these many centuries, so I believe that the Law of Peace that was written in that message will prevail over the pride of nations and that it will hasten the day when war will be no more.

THE TEST OF CHARACTER.

LETTER BY MR. NATHAN STRAUS TO THE REV. DR. JOHN HAYNES
HOLMES, NEW YORK, DECEMBER 15, 1913.

I READ with much pleasure and deep appreciation your article on "The Test of Character" in the New York Herald of December 7th and I want to let you know how completely and eloquently it expresses the thought that has been the mainspring of my work.

I am glad to have this truth wrought out so skilfully and with such compelling earnestness, for I am sure that it will do a great deal of good to humanity. Truly it is not the letter but the spirit that giveth life. And you say, "It is the heart that counts, love that conquers, the spirit that redeems."

What a vastly different world this would be were men and women to follow faithfully the profound yet simple philosophy of the Psalmist, working not for themselves, but for their fellow men, seeking only to be upright and to do good. This is not only the best test of character, but the process by which greatness of character is wrought in spite of the infirmities of the flesh.

INDUSTRIAL INSURANCE.

"I am gratified at your cogent appeal to perfect the system of industrial insurance by coupling therewith systematic work for the prevention of disease.

"Your argument is economically sound, and of the greatest importance. Only by the methods that you advocate can industrial insurance be brought within such limits of cost as to be feasible. Otherwise the cost will in many cases be prohibitive, especially in industries in which there is a small margin of profit.

"Your argument is socially sound as well, for disease prevention is the most promising means of improving the average condition of the people, promoting prosperity, and increasing happiness."

— Letter to Dr. W. J. Schereschewsky, U. S. Public Health Service, 1914.

WAR AND WAR PREPAREDNESS: WHAT SHALL PATRIOTIC MEN DO?

ADDRESS BY MR. NATHAN STRAUS AT THE SECOND ANNUAL CONVENTION OF THE LAYMEN'S EFFICIENCY LEAGUE, SYNOD HALL, CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK CITY, OCTOBER 19, 1915.

I AM glad to stand in the Synod Hall of this city's great cathedral to speak for peace. I am glad to stand here as a Jew and do reverence to the personality and teachings of that great Jew whom all the world recognizes as the Prince of Peace.

The invitation which I have received to come here may have been suggested by my work, which has been, for more than thirty years, the prevention of disease and of unnecessary deaths among children. As a private individual, carrying on a campaign against impure milk, against consumption, against the frightful death rate among children, I have done what I could, in this country and in many countries of Europe, to save children from untimely death.

As a business man dealing with the public on a considerable scale, I have made an absolute rule against permitting dealing in any deadly weapons, revolvers, or anything designed to take human life.

Of late years many, officially and otherwise, have joined the campaign for the prevention of disease and death. But how empty seem the efforts of individuals to save life, when the great organized nations are devoting all their energies to destroying life.

How useless it seems to save the lives of the children, if they are to grow up merely to be made food for cannon, to lie mutilated in agony on the battlefield.

I thank you, gentlemen of the Laymen's Efficiency League, for inviting me to say whatever is in my mind, without restriction or limitation. And I believe that what I will say as to the topic of the evening will be most strictly Christian as well as most truly Jewish. For the cardinal doctrine of the Christian religion is exactly the same as the doctrine of the religion out of which Christianity sprang.

PEACEFUL EQUITY AMONG MEN AND AMONG NATIONS.

Peaceful equity among men and among nations was the ruling principle of the law that was given to Moses on Mount Sinai and of the teachings given by Jesus of Nazareth in that wonderful Sermon on the Mount.

Yet war has followed war, until now half the world is involved in the most atrocious denial of the fundamental duty of men and of nations — the duty to live in peace and to let live.

Now no one will deny that peace is a duty imposed by God upon his creatures, and that war is the impudent and brutal refusal of men and of nations to conform to the ideal of life that the Almighty God marked out for them.

Shall we say then that God has failed? Shall we not say rather that men and nations have fallen short of their sacred duties? Shall we not believe that the plan of God for peace on earth will yet be realized?

Let us remember that the doctrine of peace was first taught in a world in which every man's hand was against every other man. Peace then was an impossible idea. Yet what do we find to-day? Do you settle your differences with your neighbor with your fists? or with the sword? or with a gun? Has not peaceful equity among men been established by law? Is it not a rare thing for men to fight?

Certainly this much progress has been made. Peaceful equity has been substituted for personal combat between individual men. The idea of peace, once an impossible conception, has been woven into the customs of humanity so far as individuals are concerned.

NATIONS LESS CIVILIZED THAN INDIVIDUALS.

But men acting collectively, in national groups, are far from being as civilized as they are in their individual lives. And so we still have war. And so we have the most monstrous of all wars, in spite of thirty-five centuries of Jewish teachings and in spite of nineteen centuries of Christian teachings.

Shall we say, therefore, that while we may have peace among individual men, we cannot have peace among nations? I refuse to admit this. I believe that out of the terrible and consuming turmoil of the present European war will come that peace among nations that has been a human ideal only in recent years.

When the passions and the pride that caused this war have become exhausted by the struggle, and when the cost has been counted — the cost in men and in treasure, the cost in suffering and grief — I do believe that there will be such a revulsion of feeling against war that the nations will with one consent turn to the remedy now ignored, to the peaceful settlement of international disputes by arbitration.

Then, instead of mobilizing armies and wreaking death and destruction upon each other, the nations will appear as litigants before the Permanent Court of Arbitration, and peaceful equity will be substituted for combat in the disagreements of nations as well as in the differences of individuals.

Greed and pride are the causes of war. Greed and pride are the causes of disputes between men. Greed and pride have been brought under law in the relations of individuals. It has taken centuries to do it, but it has been done. The great work of the present century is to bring greed and pride under international law in the relations of nations.

And this is what all peace movements mean.

STRENGTH REQUIRED TO ENFORCE PEACE.

Peace does not mean that nations must weakly yield rather than fight. Peace means that the great nations must organize as a community and refuse to permit war, just as every community in the civilized world organizes and refuses to permit fist fights or duels or lawless acts of private vengeance or private aggression.

It requires strength to enforce peace. No community can compel order without a well organized and sufficiently strong police force. The law-abiding citizens cannot control the brawlers by moral suasion alone. Law and order require preparedness in the shape of night sticks, revol-

vers and handcuffs. The brawlers among the nations can be prevented from breaking the peace only by such strength on the part of the peaceful and law-abiding nations as will overawe the quarrelsome, law-breaking nations and compel them to behave.

I have no patience with the idea that any of the contenders in the present war wanted peace. They wanted war, and they got it, and it has proven far more terrible than any of them ever imagined. Blood-guiltiness is upon all of them. They have wilfully engaged in a huge riot, and they are paying the price.

And there was no power on earth to stop them. Not one, nor all of the other nations could say to Germany and to England, "You shall not fight." And so their bitter commercial rivalries are being vented in war.

How different it would have been if America and the other great neutral nations could have said to Kaiser and to King, "Think of the terrible misfortune into which you are plunging your country — its citizens, for whose welfare and happiness you as a ruler are responsible. Think of the dreadful consequences, and of the doubtful benefit paid for with the precious blood of the hundred thousands."

For in the last analysis is there anything at all in this war but a miserable, contemptible brawl between the two biggest powers?

PREPAREDNESS NEEDED TO COMPEL AND GUARANTEE WORLD PEACE

And is there any reason at all for this war except that there was no concert or community among nations sufficiently powerful to prevent it?

Now the power to do this thing, the power to prevent war, can be achieved only by the most thorough preparedness on the part of the nations that want peace and order in the world.

This, I maintain, is the overwhelming reason why America should have a powerful navy and a strong army, and the thorough equipment essential to the efficient use of this power.

We need preparedness — not to fight battles, but to prevent battles being fought. We need preparedness, not to defend this nation against foes, but to compel and guarantee world peace.

And America alone of all the nations is in the position to make such use of power as will curb and control the bickering, jealous nations that keep this world in such turmoil.

I deny emphatically that preparedness leads to war. I assert with deep conviction that thorough preparedness on the part of America will be the best guarantee that the world can have that there will be no more wars.

If it is possible for this country to be threatened by war — and who can say that it is not possible — can such a calamity be better averted by weakness or by strength?

AMERICA THE KEEPER OF WORLD PEACE.

If it is possible for this world to be delivered from the fearfulness of war — and who can say that it is not possible — can such a universal benediction be pronounced by any other nation than America? And can America enforce such a world peace by weakness or by strength?

It was Cain, the murderer, who asked cynically, "Am I my brother's

keeper?" America, the big, young brother of the nations, has been made in the process of the world's development the keeper of the peace of the world, for there is no other nation so strong in its resources and so unselfish and so free from international entanglements as to be able to execute this role.

It is therefore, to my mind, a duty that we owe not only to our own people, but to all the world, to be so thoroughly well prepared as to be not only invincible, but able to say to any nation that presumes to disturb the peace of the world: "Take your quarrel to the court of the nations, the Permanent Court of Arbitration." And to say this, and yet escape being made foolish, we must have the power, the preparedness, to summon the offender before the high court if he presumes to affect not to heed the order to keep the peace.

You ask, "What shall patriotic men do?" My answer is, make America so strong in preparedness that it will be able to guarantee the peace of the world. This may be an ambitious idea, but America has every right to be so blessedly ambitious.

What a father would do to protect his children, a government should do to protect the people. It is the duty of our government, concentrated on the welfare of the United States, to make such preparations and authorize such expenditures as will save us from the experience, the horrors inflicted upon the nations of Europe.

LET EVERY ONE PROVE HIMSELF WORTHY OF PEACE.

If the government has its duty, the individual citizen also has his duty. This is my suggestion: Let Americans, blessed with peace and safety, spend in relieving the unfortunates of Europe at least a part of what war would cost us individually if the blessings of peace were removed.

Let every man rich enough to pay an income tax give to the war sufferers an amount equal to his income tax.

Very quickly would our income tax be doubled, trebled and quadrupled if war should come upon us. Let us show our gratitude, not by eagerly striving for profit, but by proving sympathy. For each voluntarily to tax himself, for the well-to-do of this nation to contribute a fund of fifty millions or more in the year to the unhappy sufferers of the nations at war would be to give practical proof that we appreciate the peace blessing.

I advocate that proof.

To believe in peace and that it can be made permanent; to work for peace and to strive to keep it when at last we get it. That is our duty.

To prepare this nation vigorously, fully, against war, so that no nation may think of attacking us — that is our duty.

And, blessed as we are among the nations, in peace, in prosperity, in safety, let us give generously to the less fortunate and prove ourselves worthy of peace and its blessings. That is above all our duty.

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